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CYSTS OF THE EXTERNAL SEMILUNAR CARTILAGE OF THE KNEE

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CHICAGO

Ebner,[1] in 1904, was the first to describe cyst formation in the external semilunar cartilage. Since then there have been twelve other cases reported: one by Schmidt,[2] six by Riedel,[3] one by Eden,[4] and four by Ollerenshaw.[5] The two cases reported here are apparently the first to be reported from this country.

REPORT OF CASES

CASE 1.—*History.*—C. B., a man, aged 22, who entered the Presbyterian Hospital, Aug. 24, 1920, had had stiffness and pains in the right knee during the preceding three years. They were slight at first, and worse during the winter months. There had been times during the summer months when the knee was practically normal. There had been several acute exacerbations lasting for two or three weeks, during which time both limitation of motion and pain had been considerable. The pain had been most marked over the lateral surface of the joint, although there had been some discomfort throughout the entire joint. There was no history of disturbance in other joints, and no previous diseases except measles during childhood.

Physical Examination.—The patient was well developed, and examination gave negative findings aside from the region of the right knee. On inspection the knee appeared normal except for a small oval swelling over the lateral surface of the joint just above and in front of the head of the fibula. Motion was limited to 90 degrees, and produced considerable pain. On palpation, the swelling was fixed, tense, smooth and somewhat tender. There was no external evidence of fluid in the joint or of thickening of the synovia. A probable diagnosis was made of detached external semilunar cartilage, although there was no history of locking.

Operation and Result.—Through a lateral incision in the line of the joint, the external surface of the semilunar cartilage was uncovered; an oval cystic swelling sprang from it. The joint was then opened and the entire cartilage and cyst excised. There was no excess of fluid in the joint, and the synovial lining appeared normal. The postoperative course was uneventful. Function in the knee returned to normal within two months, and has remained so up to the present writing, two years and four months later.

Pathologic Examination.—The superior and inferior surfaces of the semilunar cartilage appeared normal, but there was an oval swelling 3 cm. long springing from the middle portion of its convex lateral surface (Fig. 1). On section, this proved to be a multilocular cyst filled with a thick, stringy, clear fluid (Fig. 2). There was an extensive yellowish white area of degeneration within the cartilage, extending inward to a depth of 1 cm. In the lateral portion of the degenerated area, at the edge of the cartilage and base of the external swelling, there were numerous small cysts filled with mucinous fluid. A section for microscopic examination was taken through the middle of the external swelling; it included a triangular wedge of the semilunar cartilage (Fig. 3). It disclosed degenerative changes in the center of the cartilage, becoming more extensive and marked as the lateral margin was approached. About the margins of this area the nuclei were breaking down, and the coarse fibers of the intercellular substance were losing their outlines. The deeper portions of the degenerated area consisted of an irregular meshwork of shreds, throughout which were numerous small cavities and mucinous substance which took a hematoxylin stain. The cystic swelling springing from the side of the cartilage had a coarse connective tissue covering. The walls of the multilocular cyst consisted of thin, dense layers of mature connective tissue. There were numerous thin septums partitioning it, especially about the periphery, where the loculi were very small. Two or three of the larger loculi were lined by a fairly thick layer of young, richly cellular connective tissue. This layer contained occasional leukocytes, and showed hemorrhagic infiltration and mucoid degeneration along the surface. There was practically no leukocytic infiltration or vascular engorgement to be seen in any other portion of the section. The blood vessels about the surface of the external cyst were mostly normal, a few of the smaller arteries showing thickening and hyaline degeneration of their walls.

The changes were entirely degenerative in nature, there being none of the other evidences of inflammation. No lining of an epithelial or endothelial nature could be detected in any of the cysts, whether located in the older peripheral or more recent intercartilaginous portions of the diseased area.

CASE 2.—*History.*—M. J., a woman, aged 18, who entered the Presbyterian Hospital, Oct. 11, 1922, during the last two months had had slight pain in the lateral portion of the right knee. It had been most marked when she arose to walk after sitting for some time. From the onset, she had noticed a slight swelling over the lateral aspect of the knee. She had had the usual diseases of childhood, and tonsillitis. Tonsillectomy had been performed several years before I saw her.

Physical Examination.—The patient was moderately well developed. Regional examination was negative aside from the right knee. Inspection of the knee revealed a very slight swelling just above and in front of the head of the fibula. There was full motion in the joint, but slight pain was experienced on complete flexion. On palpation, the lateral nodule was tense and slightly tender. It lay in the plane of the knee joint.

Profiting by experience with the previous case, cyst of the cartilage was suspected, and an aspirating needle was inserted. A thick, clear, mucinous material was removed which confirmed the diagnosis.

Operation and Result.—Through a lateral incision in the plane of the joint, the cartilage and attached cyst were excised. The joint was otherwise normal. The postoperative course was uneventful, and there was complete return of function six weeks after operation.

Pathologic Examination.—Gross: The superior and inferior surfaces of the semilunar cartilage were smooth and normal

1. Ebner, A.: München. med. Wchnschr. **51**: 1737, 1904.
2. Schmidt, Erhard: München. med. Wchnschr. **53**: 1415, 1906.
3. Riedel: Deutsch. Ztschr. f. Chir. **132**: 167, 1914.
4. Eden: Naturwissenschaftliche medizinische Gesellschaft zu Jena, May 18, 1911.
5. Ollerenshaw, Robert: Brit. J. Surg. **8**: 409 (April) 1921.

in contour, but the color of the cartilage was considerably altered. The inner two fifths bordering on the concave margin presented a bluish, transparent, normal appearance, but the remaining lateral portion was opaque and yellowish white. Springing from the middle portion of the side of the cartilage, there was an oblong cystic swelling which measured 2.5 cm. in length by 1 cm. in diameter. Its outer

Fig. 1 (Case 1).—Top view of cartilage and cyst.

surface was somewhat nodular. An incision was made through the middle portion of the cyst and cartilage. The cyst was multilocular, and filled with a stringy, clear, mucinous material. There was a wedge shaped, yellowish white area of degeneration extending into the cartilage for two fifths of its breadth. Small cysts were present in the

Fig. 2 (Case 1).—Incision through cyst and into cartilage, showing cavities and areas of degeneration.

outer portion of the degenerated area, the largest of which was the size of a grain of wheat. A second incision was made through the cartilage just anterior to the limits of the cyst, and here the yellowish white degenerative change was also present, but there were no macroscopic cysts.

Microscopic: A section cut through the middle portion of the cyst and cartilage disclosed that the outer wall of the cyst springing from the side of the cartilage was composed of fairly thick, mature fibrous tissue. The cyst was multilocular, some of the cavities being quite large and possessing in places a richly nucleated connective tissue lining; but in most cases the lining of the cyst consisted of newly formed degenerating connective tissue, which in places was markedly hemorrhagic. Several of the smaller loculi about the periphery contained much blood. Some of the arteries, both large and small, were considerably thickened. There was no leukocytic or lymphocytic infiltration of the walls of the loculi. The necrosis of the newly formed connective tissue was marked by the presence of irregular, fragmented fibrilli and breaking down of nuclei, with a variable amount of extravasation of red blood corpuscles in the region. No endothelial or epithelial lining was seen in any portion of the loculi (Fig. 5).

The cartilage itself contained in its lateral portion a number of small cysts that were becoming confluent and were separated by thin plates of connective tissue in various stages

Fig. 3 (Case 1).—Microscopic section through cyst and cartilage.

of disintegration. The rest of the wedge shaped degenerated area consisted of a mucinous substance, coursed by irregular fibrillae and staining deep blue with hematoxylin. Cultures made from the fluid aspirated from the cyst remained sterile.

COMMENT

The pathologic findings in these cases are identical with those of colloidal cystic swellings which develop in various connective tissues, especially on the back of the wrist, and are commonly designated as ganglions. Most ganglions of the semilunar cartilage have occurred in young adults. The youngest patient was 16 years old, and the oldest was 55; the average age at the time of operation was 25 years. There were ten males and five females.

Trauma seems to have played a rôle in some cases, but it is of less importance than in ganglions of other locations, particularly those about the wrist. Schmidt's case followed four weeks after a blow on the knee, and

in all of Ollerenshaw's four cases there was a history of slight injury. In the remaining ten cases, there was no history of injury. As the lesion has never been observed in the internal semilunar cartilage, it has been thought that the greater weight bearing of the outer side of the joint, due to the slight inward angulation at the knee, predisposes the external semilunar cartilage to injury and secondary cystic degeneration. That traumatism is an important factor in the production of ganglions in general is shown by statistics collected by Ebner, which disclose that in the upper extremities 82.5 per cent. are in females and 17.5 per cent. in males, while in the lower extremities the proportion is reversed, 87.5 per cent. occurring in males and 12.5 per cent. in females. The lower extremities are much more likely to be the seat of traumatism in males than in females. It is not known whether traumatism, either single or repeated, is the sole cause of the subsequent cystic degeneration or whether there is an added element of low grade infection.

Cultures were made of the fluid aspirated in Case 2, but there was no bacterial growth. None of the other cases were examined bacteriologically.

The pathologic change is essentially a degenerative one and most of the phenomena of inflammation are absent, which speaks strongly against bacterial cause of the disease. From the microscopic findings, Ledderhose [6] assumed that ganglions arise from traumatism, which produces primarily an obliterating endarteritis, followed by degenerative changes in the surrounding connective tissue. Degenerative changes are present almost exclusively in the intracartilaginous diseased portion; but, in the walls of the multilocular cyst bulging from the side of the cartilage, proliferative changes are quite extensive. Fibroblasts form and break down

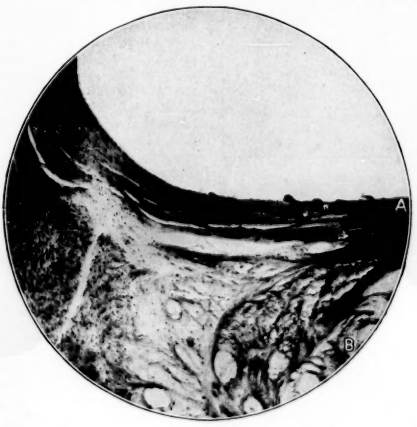

Fig. 4 (Case 1).—Junction of large cyst and cartilage, showing (*A*) connective tissue lining, and (*B*) degeneration in cartilage.

after passing through various stages of maturation. A point against the primary vascular origin of the cysts in my two cases is that blood vessels are not seen in the intracartilaginous degenerated portions, and most of the arteries in the walls of the external multilocular cysts show little obliterating change. It is most likely that the vascular alterations are simply a part of the degenerative process and not the initial change, as assumed by Ledderhose. Ollerenshaw reported an endothelial lining in some of the cavities and considered the lesion a true cyst, arising from misplaced endothelial

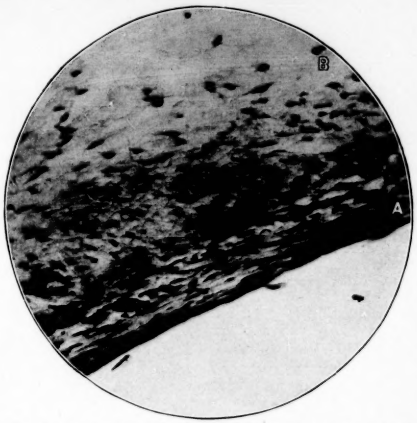

Fig. 5 (Case 2).—Section of partition between two cavities, showing (*A*) nuclei preserved along surface, and (*B*) degeneration in deeper portion.

elements that form the joint lining. His view is not substantiated by the findings in any of the other cases.

The cysts seem to attain their maximum size within a few weeks, after which they remain stationary and continue to produce pain and a variable amount of interference with motion in the joint until removed. There is no recorded instance of spontaneous disappearance either of the symptoms or of the swelling.

The treatment consists in operative removal of both cyst and external semilunar cartilage. In four instances, only the cyst was removed, and in two of these cases there was return of symptoms shortly afterward, necessitating a second operation. Excision of both cyst and cartilage has resulted in a complete cure in all cases in which it has been practiced.

6. Ledderhose: Arch. f. klin. Chir. **37**: 102, 1893.

Study Man but Not by Arbitrary Standards.—Since the time men became sufficiently numerous on the earth to make it necessary for them to take cognizance of one another, we have been setting up arbitrary standards by which to judge him; we have erected codes and laws and customs by which to measure and coerce him; we have poured out pity and "love" upon him and also hate and scorn; we have made him lovely toys, such as aeroplanes and phonographs and tried to make him happy, and when he was not happy we have tried to "save" him from something and for something—we have done all these things and more, and yet never have we seriously on any proper scale made an attempt to learn really what he is and to understand him for what he is, his possibilities for what they are, his own desires and interests be they what they may. We are approaching nearer to the time when arbitrary standards, built up without knowledge but as the result of empirical judgments, will be put aside for a time, and man will study man for what he is in the same way as he now studies other less important objects.—F. E. Williams, *Modern Hospital* **20**:141 (Feb.) 1923.

PROGRESSIVE OSTEOMYELITIS OF THE FRONTAL BONE

REPORT OF CASE *

H. B. LEMERE, M.D.
OMAHA

History.—A man, aged 32, consulted me, Jan. 19, 1922, because of protrusion of the right eye. There was no history or general sign of syphilis. The patient had had epileptic attacks early in life. He had always suffered from bad nasal catarrh, and two months previously had elsewhere had an operation intranasally for frontal sinus empyema. Three weeks before I saw him, the right eyelids swelled and the globe protruded, but after a discharge of pus from the nose, this subsided.

Examination.—The patient was well nourished and was above the medium height. He was drowsy and slow mentally. The temperature was 99.8. The right eye protruded, and the upper lid was markedly swollen. The conjunctiva was slightly infected. The cornea and media were clear. There was slight blurring of the margins of the optic nerve. The retinal veins were tortuous and swollen. Pupillary reaction to light was slightly retarded. Movements of the globe were somewhat restricted. The left eye was normal. Examination of the nose revealed creamy pus from the middle meatus on each side. There was a polyp on the right middle turbinate. There were pain and tenderness in the right temple and the external angle of the orbit. Roentgen-ray examination revealed all sinuses markedly cloudy except the left frontals and ethmoids.

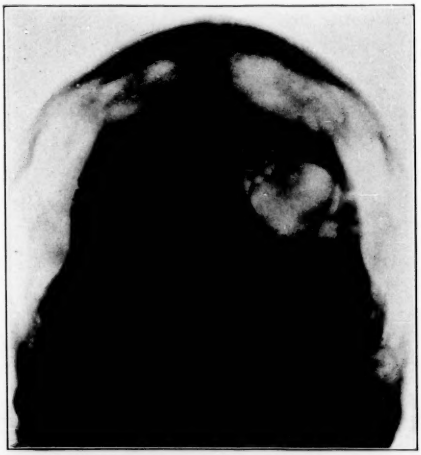

Fig. 1.—Appearance, January 19, previous to operation: right frontal sinus and both antrums cloudy; the whole bone surrounding the frontal sinus appears darker, perhaps indicating involvement of the frontal diploe at this time; the right frontal sinus appears larger than it was found to be when the actual boundary, shown by dotted line, was opened.

Treatment and Course.—January 20, the right frontal sinus was opened externally; it was full of pus, and the membrane was detached from the bone by the pyogenic process. There was no perforation in the bony wall. The floor and part of the anterior wall of the sinus were removed. The anterior ethmoids were removed and a good opening was obtained from the frontal sinus into the nose. The orbit was then explored for the cause of the protrusion, and a collection of pus was encountered about an inch back from the brow under the upper wall of the orbit and just external to the outer limit of the frontal sinus. The abscess had perforated the upper wall of the orbit, and was epidural. The bony opening was enlarged and connected with the opening made in removing the floor of the frontal sinus. Drainage tubes were placed in the orbit, and a large tube was placed to keep the frontal sinus open for observation. A free intranasal opening was made into the right antrum.

February 2, the patient's condition was not satisfactory. There was pus pouring from both nostrils under pulsation. There was a swelling over the right cheek and in the roof of the mouth, on the right side. The patient was dull mentally. The fundus showed no swelling of the disk, but a slight cloudiness of the vitreous. The protrusion of the globe had subsided. The pulse was 88; temperature, 98.6; respiration, 18. Under ether, both antrums were opened in the canine fossa, and through-and-through irrigation was begun. The right antrum was full of polyps.

February 22, the nose was fairly clear of pus. A swelling in the forehead was incised, and a large amount of pus escaped. The pulse was 84; temperature, 99.4; respiration, 24. In the next two months, thirteen abscesses over the frontal bone and in the lids and cheeks were incised, each time evacuating large quantities of pus. These incisions were all kept open by tubes until they ceased to discharge. The abscesses always connected with bone, which could be felt at the base of the abscess. In several of those opened early, the process of repair in the bone was found at necropsy to have proceeded to a point of almost complete recovery. The abscesses were of the nature of a cold abscess, and were unaccompanied by rise of temperature, pain or redness. An edema would make its appearance, and a few days later be followed by more circumscribed swellings with fluctuation. At no time was incision made into these swellings without evacuation of creamy, syrupy pus. There was never a loose sequestrum demonstrable. The entire frontal sinus was kept open wide to observation and treatment during the course of the disease. The frontal sinus septum and part of the inner table failed to form granulations at any time. The antrums were free from pus four weeks before the patient died. In spite of negative Wassermann tests, intensive antisyphilitic treatment was carried out with neo-arsphenamin, mercurial inunctions, and iodids, without apparently affecting the disease in the slightest degree. Autovaccines were prepared and used in increasing strengths without producing any marked change in the patient's condition. Calcium lactate was given, but did not affect the progress of the disease. His nourishment was kept up well until the last. The surgical treatment of the abscesses consisted in opening them and keeping them freely open with tubes and irrigating frequently with surgical solution of chlorinated soda (Dakin's solution), mercuric chlorid and the like. Local applications of silver nitrate, 10 per cent., and tincture of iodin were made.

April 16, an abscess had formed beyond the frontoparietal suture, which had formed the boundary up to this time beyond which the osteomyelitis had not progressed. An abscess also had formed over the right mastoid, though hearing was good and the middle ear normal. Both of these were incised, with release of a large amount of pus. It was felt, however, that this further invasion meant the breaking down of the patient's resistance. His appetite was still good; pulse, 90; temperature, 101; respiration, 24.

April 19, he became dizzy in the afternoon and refused food. He was more drowsy than usual. He had difficulty in speech. He complained of pain in the head. The pulse was 60; temperature, 97; respiration, 24.

April 20, both disks were pale, with no swelling and no tortuosity of the vessels. There was a conjugate deviation to the left. The patient complained of headache, but was very quiet. Kernig's sign was positive. The neck was sore and

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* Candidate's thesis, accepted by the American Laryngological, Rhinological and Otological Society, January, 1923.

stiff; there were slight muscular twitchings. The pulse was 60; temperature, 99.6; respiration, 30.

April 21, the patient's respirations ceased just before my arrival at the hospital. I found his pulse going, though he was apparently dead. Artificial respiration immediately improved his circulation, and his pulse became 84 and strong. Artificial respiration was kept up for one hour and ten minutes; but as the respiratory centers did not respond, it was felt that they were completely overwhelmed. The pulse was 140 and thready. Two minutes after artificial respiration was stopped, the patient died.

Roentgen-Ray Examinations.—The roentgenograms revealed the progress of the osteomyelitis. The plate taken when the patient first consulted me (Fig. 1) reveals some haziness at the lower inner portion of the anterior wall. There is also a very slight change from the normal appearance of the frontal diploe. It is possible that this is the first stage of the pronounced osteomyelitis shown in the later plate, and that this may be the commencement of the osteomyelitis. A roentgenogram, taken February 18, outlined distinctly the portion of the right frontal bone that came away at necropsy, and there is evidently an effort here to sequestrate this piece and throw it off. Figure 2, also taken at this date, discloses the osteomyelitis already well developed. Figure 3, taken March 27, shows the bone very much as we found it at necropsy. All the cranial and facial bones seem to be involved with the exception of the occipital.

These plates would seem to indicate the necessity of frequent roentgen-ray examinations during the progress of a frontal sinus case when the patient is not doing well.

Fig. 2.—February 18, four weeks after: riddled appearance of frontal ethmoid and superior maxillary sinus on left side, and mottled appearance over frontal region of right side.

Laboratory Findings (by Dr. A. S. Rubnitz).—The Wassermann examination of the blood, January 21, was positive, but was not considered conclusive, as the blood was taken soon after operation. January 26, it proved to be negative. There was no antisyphilitic treatment in the interval. The spinal fluid was examined, January 23. There was no increased pressure; the cell count was 60 per cubic millimeter, chiefly lymphocytes; globulin was moderately increased. The Wassermann reaction was negative. There were no antisyphilitic measures taken before or during the period of these tests.

Cultures were taken at different times. January 23, pus from around the tube (frontal sinus) yielded a gram-positive bacillus (diphtheroid organism). February 19, a direct smear from the frontal sinus yielded a few small bacilli. When a culture was taken on blood agar, the agar was almost completely liquefied, and had a very foul odor. The organism recovered was a small, gram-negative bacillus, most likely of the *proteus* variety. There were also a few gram-positive diplococci that looked like pneumococci. February 22, a smear from a skin wound around the anterior fontanel yielded some staphylococci and a few short chain streptococci.

The urine was about normal throughout. The leukocyte count was only slightly increased: from 9,000 to 14,000. *Bacillus proteus*, the colon variety, had probably much to do with the breaking down of the bone and soft tissues around them, although not the prime causative agent of the infection. The staphylococci found later in the superficial scalp wounds were most likely the first agents in the infection.

Necropsy (by Dr. J. Jay Keegan).—The examination was limited to the head. Superficially there was an old draining sinus opening in the right frontal region, entering the frontal air cells. There was also a drainage wound in the right mastoid region. A scalp incision was made across the head from ear to ear. Pus was found in the line of incision beneath both temporal muscles. The scalp was reflected anteriorly and posteriorly, disclosing a greatly eroded frontal bone in the region of the frontal sinuses. Only a much perforated bony framework remained in the supra-orbital region, this portion being easily separated from the squamous part. There was a considerable quantity of foul-smelling pus in the right frontal sinus. Creamy pus formed a thin layer over almost the entire surface of the frontal bone, extending laterally over the squamous portion of the temporal bones and including a part of both parietal bones. The involved bone had an eroded, roughened surface from the active osteomyelitis. In both temples, pressure revealed the bone to be freely movable on the dura, owing to surrounding necrosis. The calvarium was removed by the usual incisions with saw, except that in the anterior region separation was made without sawing (Fig. 4). On removal of the skull cap, pus was seen in a thin layer between the dura and the involved temporal and parietal bones, extending on the right to the mastoid region and communicating with the drainage wound. The dura was intact in all regions. Both frontal sinuses were filled with pus. The dura was opened, and the subarachnoid space appeared normal over the frontal lobes except for moderate congestion of the cortical vessels. The frontal lobes were withdrawn, exposing the region of the optic chiasm, where there was considerable fibrinopurulent fluid in the cisternal space. Following the usual methods of removal, the brain was removed by incision of the optic nerves, oculomotor nerves and the tentorium. Along the petrous portion of the temporal bones there was a small pocket of pus just above the left seventh and eighth nerves beneath the tentorium. This pocket appeared to communicate with the foramen of entrance of the left fifth nerve root. Dissection in this region disclosed a questionably infected cavernous sinus on this side. The entire basal cisternal subarachnoid space contained fibrinopurulent exudate. The ethmoidal cells were fairly clear. The sphenoidal cells were filled with a thick pus. There was considerable necrosis of the roof of both orbits, but no infection in the orbital cavity. The posterior surface of the petrous portion of the right temporal bone showed surface necrosis not penetrating the dura.

The petrous portion of both temporal bones and the mastoid cells were opened, but did not appear to be deeply infected. Beyond the basal subarachnoid space there was no involvement of the brain proper.

The pathologic diagnoses were: osteomyelitis of the frontal bone, with contiguous involvement of the parietal and squamous portion of the temporal bones; frontal sinus infection; empyema of the sphenoidal cells; basilar meningitis, and subarachnoid abscess in the region of the left seventh and eighth nerves.

The primary cause of death was infection of the frontal sinuses. Contributory causes of death were osteomyelitis of the frontal bone, and basilar meningitis.

CASES ALREADY REPORTED

The first fully reported cases I have been able to find in the literature are those reported simultaneously before the section of Laryngology of the British Med-

ical Association in 1899, by Luc[1] of Paris and by Tilley.[2] Tilley also reported at that time two other cases that had come to his notice. McKenzie[3] gathered all the available literature and cases from that time to 1913, and compiled these statistics of forty-eight cases in a complete and comprehensive treatise. Since that time, several reports have appeared.

Porter's[4] patient was a woman, aged 46, in whom a frontal sinus operation was performed. Later, other sinuses were affected and operated on. Six months later, frontal osteomyelitis had developed and was operated on with extensive removal of bone. The patient recovered, and enjoyed good health for one year, when she died of pneumonia.

Mollinson's[5] patient was a boy, aged 15. During a frontal sinus operation, pus oozed from the bone, and there was extensive removal of the frontal bones. The patient recovered, but McKenzie[6] thought that sufficient time had not elapsed to pronounce the recovery final.

Patterson's[7] patient was a soldier who had osteomyelitis after an operation on the frontal sinus. Twelve operations were performed, resulting in recovery.

Tilley's[8] patient was a woman, aged 35, whose frontal sinus was operated on. Six weeks later an operation was performed for osteomyelitis; the whole left frontal bone, together with inflamed dura and brain tissue, was removed. Sequestrums appeared for several months, but finally the patient completely recovered.

McClay's[9] patient, a man, aged 30, had had intranasal operations on the antrums, ethmoids and frontonasal duct. Two months later, osteomyelitis set in. The whole anterior wall of the frontal sinus and a large portion of the outer table of the left frontal bone were removed. At later operations, the greater part of the left and part of the right frontal bones were removed. The last operation was performed six months after the first surgical treatment. The patient recovered. McClay states that this is the third case he has reported; one spontaneous and one postoperative case ended in recovery, and the other postoperative case did not.

Opdyke's[10] patient, a boy, aged 18, had the left frontal sinus curetted. Eleven days later, a trephining operation was performed, with aspiration of seropurulent fluid from the fourth ventricle. Ten days later, parts of the parietal, occipital and temporal bones were resected. Several weeks later, a double frontal sinus operation was performed. The patient recovered after several months during which twenty-one operations were performed.

Bryan's[11] patient, a boy, aged 15, had an operation on the frontal sinus, with localized osteomyelitis. The operation was followed by spreading osteomyelitis. Death occurred eleven months later from a subdural abscess after complete relief of the osteomyelitis following repeated operations.

Skillern's[12] patient had osteomyelitis of the frontal, superior maxillary, malar ethmoid and sphenoid which resulted in death without extending into the diploe of the frontal bone.

Lynah[13] reported a case of osteomyelitis complicating scarlet fever in a girl, aged 13. This was a fulminating acute case, all sinuses on the left side and osteomyelitis of the frontotemporal region occurring simultaneously. There was apparent recovery six months after the opening of the sinuses and removal of sequestrums and softened bone from the frontal, temporal and malar bones; but sinuses and pus pockets developed at intervals, and the case could not be considered as closed

Fig. 3.—Appearance, March 27: honeycombed condition of bone; the shape of the part immediately above *A*, and containing part of the right frontal sinus which separated at necropsy, can be distinctly seen; *A*, sequestrum found almost detached at necropsy; *B*, opening made into frontal sinus; *C*, frontoparietal suture.

Wood[14] reported two cases: In a boy, aged 15, drainage of the frontal bone was necessary, and later parts of the frontal bone were removed; the patient died two months after the onset of the disease. A man, aged 24, had osteomyelitis after a frontal operation; abscesses were opened; diseased bone was removed. Trephining was performed for a brain complication. The patient died four months after the onset of the disease. Necropsy revealed brain abscess and hernia and diffuse pachymeningitis and leptomeningitis.[15]

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Lund, R.: Case of Frontal Sinusitis with Suborbital Abscess Followed by Osteomyelitis of Frontal Bone, Hospitalstid. **64**: 111, 1921, Sect. Oto.-Laryngol.

COMMENT

McKenzie makes the classification of (1) localized osteomyelitis, which has no tendency to spread, and heals after the diseased focus is removed, and (2) diffuse or spreading osteomyelitis, which has a great tendency to progress in spite of all procedures. Diffuse osteomyelitis he further divides into spontaneous and postoperative, the spontaneous variety making its appearance from an infected sinus which has not been operated on, and the postoperative appearing in frontal sinus cases in which operation, especially external operation, has been performed. In twenty-one spontaneous cases gathered from the literature there were seven recoveries, while in twenty postoperative cases there were no recoveries. McKenzie also lays down the rule that the diseased bone should be freely and extensively removed.

In reading McKenzie's article I naturally applied his remarks to my case. He states that while the diploe is not of prime necessity in the production of the disease, this structure undoubtedly aids in spreading the disease. The first roentgenogram in my case reveals a cloudiness of the bone in the lower anterior wall of the sinus about the root of the nose, not so clear in the reproduction as in the original negative (localized osteomyelitis), but there is also a suspicion of disturbance in the structure of the frontal bone. The second roentgenogram disclosed marked changes both in the dense bone above and in the diploe. McKenzie thinks that progressive osteomyelitis does not often complicate empyema of the antrum because the bone in the antrum has a better vascular supply. In my case there was an early involvement of the bone in the floor of the antrum, with a pus accumulation under the hard palate. This invasion seemed to clear up until much later in the disease, when the patient's resistance became much reduced and it again asserted itself in abscesses of the cheek and zygoma. McKenzie is driven to the conclusion that the lowered resistance of the bony tissue to the infection from some unknown cause is the main factor in progressive osteomyelitis. My patient showed so little local reaction, such as redness, pain and enlarged lymphatics, and so little general reaction (pulse, temperature, delirium, anorexia) that the symptoms were those of a cold abscess. *Bacillus proteus*, which we found, probably assumed renewed virulence or power of lysis in the osseous structures without arousing general resistance.

McKenzie mentions entrance of the disease directly to the osseous walls of the sinuses or through the veins connecting the mucous membrane and the osseous structures, and many observers believe that severe curetting of the sinus walls starts the disease. The mucous membrane in the frontal sinus in my case was already loosened from the bony walls by the pyogenic process, and there was no instrumentation of the walls other than producing the openings necessary for drainage, which were accomplished by sharp instruments with the minimum of trauma. The necropsy finding of involvement of the posterior wall of the petrous portion, apparently jumping there, would indicate at least some extension by the veins. McKenzie's statement that the usual fatal ending of leptomeningitis comes by entrance of the pus to the base of the brain along the cranial nerves was borne out in the necropsy of my case, in which the left fifth nerve entrance seemed to be the portal of entry. The cases McKenzie quoted showed entrance by way of the optic nerve, cribriform plate, and by the seventh and eighth by way of the mastoid; but no observation was made of entrance by the fifth. That the etiologic factor was an inexplicable lack of resistance is shown in my case by the fact that the extensive purulent leptomeningitis produced no intracranial pressure and no pain, severe headache or delirium. Somnolence and death from toxins showed the yielding to the infection without any fight, and this, though the patient remained well nourished and strong almost to the last.

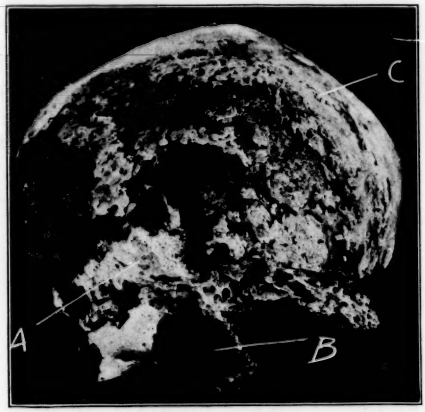

Fig. 4.—Calvarium: sequestrum in place. *A*, *B* and *C*, same as in Figure 3.

In none of the literature is the importance of the roentgen-ray observations on the osteomyelitis emphasized. In another case I should check the treatment and operative work by roentgenograms taken at least once a week, and all bone showing any involvement would be promptly removed.

CONCLUSION

Diffuse osteomyelitis of the frontal bone is still mysterious in its etiology, and the mortality with or without extensive bone removal is exceedingly high. Every case occurring should be fully reported with roentgen-ray pictures (not findings) and careful bacteriology, and where death results, careful necropsy findings. If this should be done generally we should soon have sufficient cases to lay down some further fundamentals than those so ably deduced by McKenzie.

Beriberi Control in the Philippines.—Beriberi was formerly one of the principal causes of death in the islands. For five years, ending, 1908, the average number of deaths a year in Manila was 487.6. During the next five years, it rose to 1,105.8. From 1914 to 1918, the period during which anti-beriberi measures, such as the use of unpolished rice and a more varied diet in government institutions, were adopted, the incidence from beriberi dropped to 860; and since 1919, the average mortality from the disease has been further reduced to 605. An appropriation of 12,000 pesos was made in 1917 for the manufacture and distribution of tikitiki extract, and pamphlets on infantile beriberi and its prevention.

SIMPLE GOITER AS A RESULT OF IODIN DEFICIENCY

PRELIMINARY PAPER *

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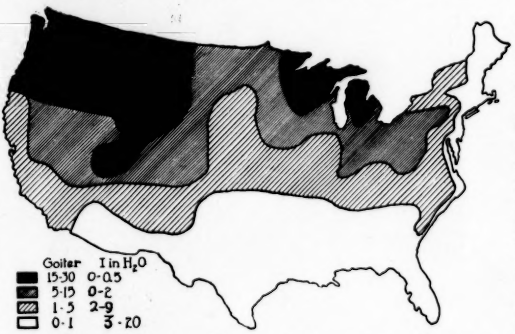
Chatin [1] advanced the hypothesis that simple goiter is correlated with a low iodin content of drinking water, but his opinion was not accepted. Heretofore the methods of iodin analysis have not been very well developed so as to determine small quantities in water. According to the director of the Geological Survey, iodin has been detected in waters containing 1,000 parts per million of chlorin and quantitatively in mineral waters containing 5,000 parts of chlorin per million. In Europe, certain determinations of the iodin content have been made; for instance, Macadam determined the iodin in 100 gallons of the Edinburgh water supply.

We have been using the method that I described before the Society of Biological Chemists in Toronto, Dec. 28, 1922, and our results so far have all fallen into line with the idea that there is an inverse ratio between the amount of iodin in surface waters or those of shallow wells or springs, and the distribution of goiter. The accompanying map shows the general findings. The goiter data were taken from photostat copies of the manuscript of "Defects Found in Drafted Men," War Department, 1920, and also from Table xxxiii of that volume. This represents the examination of about two and one-half million drafted men, and yet this number was too small for accurate statistical work in relation to simple goiter. The probable error was very high, and in interpreting these data a certain amount of smoothing of the curves was done in order to make the zones continuous. The probable error is high, owing not only to the small number of cases of goiter reported, but also to the fact that different examiners may have different standards. If we compare the data by the draft board with that by Kerr [2] at Camp Lewis, we notice perhaps the greatest possible difference. Kerr finds 390 enlarged thyroids to each thousand recruits from the state of Washington, and the draft board finds only forty cases of simple goiter [3] to each thousand men in the county in which the highest incidence of goiter was noted in Washington. As a matter of fact, the zones would probably not be continuous if the people remained in small localities and ate the food and drank the water from those lacalities.



Comparison of iodin in water supplies and distribution of goiter: iodin in parts per billion of representative rivers; goiter rate per thousand from Table xxxiii, Defects Found in Drafted Men, War Department, 1920, and manuscript; curves smoothed.

For instance, in olden times in Europe, particularly in the Alps, according to many observers, and in the Himalaya Mountains, according to McCarrison,[4] it was often possible to find two villages very close to each other in which the incidence of goiter is very different. In the United States, however, owing to migration of the population and transportation of food and drink there has been a smoothing out of the areas and obliteration of local differences. In fact, it is doubtful whether we are warranted in making four zones; perhaps three or even two are about all that are warranted. Two contiguous zones would necessarily shade into each other by migration. The goiter incidence in the different zones is quite distinct. In the first zone we find from 15 to 30 to each thousand men; in the second zone, from 5 to 15; third zone, from 1 to 5, and fourth zone, from 0 to 1.

The amount of iodin in drinking water from the few analyses so far completed shows in parts per billion in the first zone, from 0.01 to 0.1; second zone, from 0.015 to 1.2; third zone, from 0.06 to 9, and fourth zone, from 1.4 to 10. Of course, certain mineral waters are excluded from these analyses.

It is not intended to intimate that there is enough iodin in drinking water to prevent goiter. Even in case of the water of the lower Mississippi and certain well waters that contain around 10 parts per billion of iodin, 10 liters (quarts) of water would have to be drunk before 0.1 mg. of iodin was ingested. According to modern Swiss practice, 0.1 mg. of iodin a day is about the dose recommended for schoolchildren for the prevention of goiter, and it is certainly impossible for the schoolchild to drink 10 liters of water a day. Furthermore, in the second zone the incidence of goiter is reduced very much from the first zone, and it is enormously less than in the very goitrous regions of Switzerland; and yet in some regions the iodin in the water is less than 0.1 mg. in 100 liters.

We would then have to suppose that the amount of iodin in the daily consumption of a few liters, say 0.003 mg. or less, showed some protective action. It seems more probable that the iodin in water is merely an indication of the iodin in soils which come in contact with this water, and that the iodin in soils is concentrated by the plants growing in the soils, and in that way the population over a given area receives iodin through the food. Therefore, water which is taken

* From the Laboratory of Physiological Chemistry, University of Minnesota.

1. Chatin: Compt. rend. Acad. de sc., 1850.

2. Kerr, W. J.: Preliminary Survey of Thyroid Gland Among 2,182 Recruits at Camp Lewis, Washington, Arch. Int. Med. **24**: 347 (Sept.) 1919.

3. Too long to wear a military collar.

4. McCarrison, Robert: The Thyroid Gland in Health and Disease, New York, William Wood & Co., 1917.

from the very shallow wells or from the run-off of unpopulated areas would probably be the most typical. The amount of iodin in rivers is significant only in case the volume of the water is very large in proportion to the population along its banks, since it is very probable that all of the iodin given as drugs, besides all that taken in as food, finally finds its way into these rivers through sewage. The amount of iodin exported from Chile in 1904 was 500 metric tons. It is probable that a fair portion of this reached the United States. The amount of sewage contamination, however, could probably be measured by its chlorin content, and therefore any greatly contaminated waters could be excluded from the tables. This is evidenced by the fact that about 7,000,000 tons of salt are used in the United States each year.

As to the cause of this unequal distribution of iodin in natural waters and therefore possibly in the soil, there are at least three factors at work. In the first place, iodin is found in igneous rocks, and in the weathering of these rocks some iodin is liberated. Since the weathering of ingneous rocks is very slow, the iodin content of water in contact with them would be very small. This is probably the case in western Oregon, which is largely covered by basalt in such a manner that the surface water or the roots of plants have no access to any iodin except that derived from the igneous rocks. Most of the iodin in the world is in the sea, which contains about 60 billion metric tons of it. Its concentration in the sea has probably been determined with some accuracy, since recent investigators agree pretty well on this point. Winkler [5] found 0.038 mg. of iodin in a liter of sea water. Cameron [6] found about the same amount. I [7] was able to confirm Winkler's work in a rough manner, finding about 0.04 or 0.05 mg. of iodin in a liter of sea water. This is about 100 times as concentrated as in water from Zone 1.

Much of the United States at intervals from the Cambrian period to the Pliocene period has been submerged under the sea, and in that way has been soaked in sea water for ages, thus receiving a store of iodin; but, as the land emerged from the sea, this iodin was gradually leached out by the rains, except when buried 100 or more feet deep, as in salt deposits in Michigan, New York and Ohio. The region low in goiter, in the Southern states, was the only large region that was submerged beneath the sea in a late geological period (Pliocene), and the amount of chlorin in many of the waters, in the waters of Texas, for instance, indicates that the sea salts have not entirely leached out of the surface in this region. A salt lake covered Kansas and the adjacent territory during the Permian period.

The third factor in the iodin distribution is atmospheric iodin from sea spray and the burning of coal. The United States Geological Survey has carefully mapped the amount of sea water contaminating rain water, and finds that all of the chlorin in the rain water of New York and New England is due to sea spray. The quantity decreases rapidly as we go from the coast toward the Great Lakes, and it may be noticed from the accompanying map that the amount of goiter increases from the coast toward the Great Lakes. The iodin thus brought in amounts to 0.012 part per billion of rain water three miles from the coast, and decreases to about 0.0004 part per billion in the region of Lake Erie and Lake Ontario. This is added to the iodin derived from the soil, and may be significant. The effect of sea spray on the western coast is not shown by the draft board examinations in the prevalence of goiter. This is probably due to the obliteration of this beneficial effect by migration. The younger the person, the less time he has had to migrate; therefore we should expect more localized conditions to be reflected in infants and children. In fact, a map made by Dr. D. C. Hall, professor of hygiene, University of Washington, shows that the Puget Sound region is a region low in goiter among schoolchildren. As we recede from the sound or go down to the narrow portion, goiter increases. Narrow bodies of water have not much effect in throwing sea spray into the air, as is shown by the fact that whereas the widest portion of Long Island Sound throws considerable sea spray into the air, the narrow portion of it does not. It is very probable that the schoolchildren all along the western coast are comparatively free from goiter. Besides the sea spray, the spray of Great Salt Lake contains considerable iodin, as I was able to find 0.07 mg. of iodin per liter in it. This is evidenced on the accompanying map by an adjacent region of low goiter incidence, as contrasting with the high goiter incidence in eastern and southern Utah.

The only way to make certain of this relation between goiter and iodin is to make a large number of analyses of water from different parts of the country. Owing to the large size of the sample required, it is impossible for one investigator to procure them by his own efforts. It is therefore hoped that the interested parties will send in samples, in return for which analyses will be sent them.

The method for collecting the sample is as follows:

One-half teaspoonful of soda is placed in a tin dish pan. Several gallons of water are added, and are evaporated over a brisk fire. Measured quantities of water are added until the required amount for the zone has been added. The entire amount should be evaporated to less than a quart, and filtered into an evaporating dish and evaporated to dryness. The residue in the evaporating dish (but not that in the dishpan) is scraped out and sent to me. The smallest size sample required for Zone 1 is 25 gallons; Zone 2, 15 gallons; Zone 3, 10 gallons; Zone 4, 5 gallons. Larger samples give more reliable results.

5. Winkler: Ztschr. f. angewandte Chem. **26**: 205, 1916.
6. Cameron: Contribution to Canadian Biology, University of Toronto Press, 1922, p. 75.
7. McClendon, J. F.: Science **56**: 269, 1922.

Hospitals in Japan.—In many of the general hospitals outside Tokyo, male and female patients occupy the same ward. The lack of privacy is intensified by the presence of visitors and the dearth of screens. As a rule, the number of visitors is unlimited and they may stay all day. In other words, they may practically live with the patient. The Charity in Tokyo allows visitors but a half a day twice a week. The Leprosarium never admits them. The wards seem crowded, not only because of visitors, but also because of the number of personal belongings which each patient provides. The following is one of the thirty-three rules for patients in a prefectural hospital: "The things the patient may bring on admission to the hospital are as follows: toilet paper, night gown, towels, washbasin, teacups, charcoal, charcoal scuttle, fire shovel, fire tongs, floor cloth, cushion, bed pan (if the patient is unable to leave his bed) and sleeping mat and bedding of attendant." Most hospitals furnish bedding, but do not supply garments, except to charity patients.—H. J. Howard and W. G. Lennox, *Modern Hospital* **20**:123 (Feb.) 1923.

IS THE ACTION OF BACILLUS ACIDOPHILUS A STRICTLY BACTERIOLOGIC PHENOMENON?*

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The relief from chronic constipation and diarrhea by the ingestion of milk fermented with *Bacillus acidophilus* is a phenomenon worthy of further study.[1] The beneficial effects obtained by such therapy might be due to a multiplicity of factors. It has been held that chief among these is the ingestion of an increased volume, and more particularly the addition of considerable water to the daily diet. As against this physical or mechanical interpretation, there is a chemical explanation, based on the presence of a considerable amount of lactic acid, together with the disintegration products of the organism *B. acidophilus*. Finally, there is the strictly bacteriologic interpretation, which holds the living *B. acidophilus* organisms responsible for all benefits. The experiments here described, which are still in progress, were devised in the hope of arriving at some definite conclusion regarding this phenomenon.

EXPERIMENTAL DATA

Patients with a history of chronic constipation were given the carmin test, and daily defecations were recorded for some time prior to any treatment, in order to establish the patient's intestinal motility. The feces were examined microscopically, and the presence of gram-positive and gram-negative organisms was determined by a modified method previously described.[2] Some of the patients were then given, during the period of one week, daily doses of 1 liter of skim milk sterilized at 20 pounds pressure for fifteen minutes, which gives it a delicate cream caramel color. This uninoculated milk is identical with that ordinarily inoculated with *B. acidophilus;* therefore, if increased volume is of prime importance, beneficial effects should be induced. The data are summarized in Table 1.

The heading "no treatment" refers to the period of time during which the patients have been under observation prior to any treatment. In the first two columns under this heading is given the number of days during which the patient had normal defecations. The second column gives the total number of days under observation. The next heading "sterile milk," is similarly subdivided to show the number of days during which normal defecations occurred while the patients were ingesting milk sterilized in the manner just described. It is readily apparent that most of the these patients were severely constipated; eight of the ten patients had one normal defecation a week, or less. When these patients were given daily 1 liter of sterile milk, it will be seen that there was little, if any, improvement in their condition. While the first patient did show some improvement, the second patient became much more constipated. The third patient continued to be severely constipated. The fourth patient showed a slight improvement while the fifth became somewhat more constipated.

For the following week, three of these patients, as well as five others, were given daily 1 liter of skim milk, sterilized as described, but inoculated and incubated for twenty-four hours with *B. acidophilus* in the usual manner,[3] after which it was pasteurized by being heated in the Arnold sterilizer (steam at atmospheric pressure) for ten minutes. In order to avoid extreme coagulation of the casein, which would make the milk indigestible, the acidity caused by the fermentation was first neutralized with normal sodium hydroxid. The milk was plated out on whey agar after pasteurization, and was found to be sterile.

From the data that are presented in Table 1, it will be seen that there was no improvement in the intestinal condition of any of these patients when they were taking pasteurized milk, over their condition when taking sterile milk. Also, it may be seen that pasteurized *B. acidophilus* milk had a constipating effect, if any. It is realized that the neutralization of the milk prior to pasteurization prevents any possible activity of the lactic acid which was formed during fermentation. Therefore, in continuing these experiments, this deficiency has been overcome by adding lactic acid in an equivalent amount to the milk after pasteurization, with the same results. It is impossible completely to separate the chemical from the bacteriologic factors in such therapy, for the phenomenon must be biochemical, in the sense that the bacteria secrete by-products of a chemical nature. Nevertheless, it is of interest to determine, if possible, whether these by-products are of most importance or whether the most important factor is the actual multiplication of *B. acidophilus* in the intestine. With this end in view, patients have been given the Berkefeld filtrate of *B. acidophilus* milk, which contains the essential acids, salts and enzymes, but no living bacteria.

TABLE 1.—OCCURRENCE OF DEFECATIONS IN CONSTIPATED PATIENTS UNDER DIFFERENT TREATMENTS

	No Treatment		Sterile Milk		Pasteurized B. Acidophilus Milk		Regular B. Acidophilus Milk			After B. Acidophilus Treatment: Lactose		After B. Acidophilus Treatment: Nothing	
Patient	No. of Normal* Defecations	No. of Days	No. of Normal Defecations	No. of Days	No. of Normal Defecations	No. of Days	No. of Defecations First 7 Days	No. of Normal Defecations	No. of Days	No. of Normal Defecations	No. of Days	No. of Normal Defecations	No. of Days
1	2	14	3	7	2	5	5	51	62	..	..	19	23
2	12	19	2	7	1	6	6	16	18	..	..	46	59
3	1	34	0	7	..	..	4	67	99	11	12	20	55
4	8	31	3	7	..	..	4	41	62	20	28		
5	12	18	4	7	2	5	6	32	61	..	..	12	24
6	1	7	..	..	2	6	6	47	50	52	68		
7	4	28	..	..	0	12	7	17	22	56	60	3†	6
8	1	12	..	..	0	7	3	23	42	Continued: almost daily defecation			
9	1	14	..	..	0	7	2	16	42	Continued: almost daily defecation			
10	0	14	..	..	0	7	2	11	42	Continued			

* More than one per day counted as only one.

† Four months later.

* From the Department of Bacteriology, Psychiatric Institute, Ward's Island.

1. Rettger, L. F., and Cheplin, H. A.: The Transformation of the Intestinal Flora, with Special Reference to the Implantation of Bacillus Acidophilus, Yale University Press, 1921. Kopeloff, Nicholas, and Cheney, C. O.: Studies on the Therapeutic Effect of Bacillus Acidophilus Milk and Lactose, J. A. M. A. **79**: 609-611 (Aug. 19) 1922.

2. Kopeloff, Nicholas, and Beerman, Philip: Modified Gram Stains, J. Infect. Dis. **31**: 480-482 (Nov.) 1922.

3. Kopeloff and Cheney (Footnote 1, second reference).

These results will be reported at a later date, the present indications being that such filtrate is of little benefit.

Since neither the physical nor the chemical interpretation of *B. acidophilus* therapy can be considered adequate, the patients were given daily 1 liter of the regular *B. acidophilus* milk, in most instances reinforced with lactose. It contained approximately 200,000,000 viable organisms to each cubic centimeter. It will readily be seen from Table 1 that the beneficial effects of this treatment were soon in evidence, and that relief from chronic constipation was obtained. This indicates that the phenomenon is strictly bacteriologic in nature. Under the heading "regular *B. acidophilus* milk," there are the usual subdivisions, but the first column contains the number of normal daily defecations occurring in the first seven days. This was inserted as a basis of comparison with the results obtained with sterile and pasteurized milk. There has been an improvement, often striking, in every patient studied. This is further substantiated by the persistent improvement shown under continued treatment, as evidenced by the data in the remaining columns under this heading. Frequently the patient had more than one movement a day; but, in order to leave no room for question, they have not been counted here. Thus, in all the columns marked "number of normal defecations," it is to be understood that the number of days during which one or more movements occurred is recorded rather than the actual number of defecations.

An interesting comparison is made in Table 2 on a percentage basis, between the period before and after *B. acidophilus* therapy, the number of days of observation being used as a divisor, and the number of normal daily defecations as a dividend. If the figures under the heading "regular *B. acidophilus* milk" are compared with those in the preceding columns, it will be noted that a marked increase has occurred. For example, in the first two cases, the percentage of defecations is about double that obtained with sterile or pasteurized *B. acidophilus* milk. In the last four cases, this increase is still greater. Quantitative data such as these may, in certain instances, yield a distorted emphasis, since the character of the stools is frequently as important as the number of defecations. Therefore, it is all the more significant that the character of the stools from patients under intensive *B. acidophilus* therapy is almost invariably more nearly normal than when there is no treatment, or sterile milk or pasteurized *B. acidophilus* milk is given. The stools are of a softer consistency, and the color is much lighter. On the other hand, certain limitations are recognized, chief among these that the size of each stool is frequently as important as the number of defecations. While *B. acidophilus* therapy has a general tendency to increase the size of the individual stool, frequently the movements increase only in number, and in some patients the size remains unsatisfactory. These considerations, which will be published later, are difficult to tabulate, but should receive due recognition in the general evaluation of this method of treatment.

Of further interest in this connection is another experiment that is corroborative of the fact that the action of *B. acidophilus* is a strictly bacteriologic phenomenon.

Two members of the institute staff were extremely susceptible to *B. acidophilus* milk. Diarrhea followed the ingestion of comparatively small amounts. Therefore, it was determined to give them each 400 c.c. of *B. acidophilus* milk which had been pasteurized, without their knowledge in order to eliminate so far as possible any psychologic factors. It is particularly significant that the reactions of these two persons were identical. Following the ingestion of the milk, there was a certain amount of gas formed. This was not accompanied by undue tension or pain. Instead of having three or four defecations, as had previously been the case when 400 c.c. of the regular *B. acidophilus* milk was taken, each subject had only one normal defecation, which was customary, before retiring. Three days after this test, each subject was again given 400 c.c. of regular *B. acidophilus* milk, unpasteurized. Both were under the impression, however, that it had been pasteurized. Neither had any defecation, and both complained less of gas formation than previously with the pasteurized milk. Again, they were given regular *B. acidophilus* milk in greater volume, 800 c.c., under the impression that it was pasteurized, although it was not. With this amount, both patients had a diarrheal attack, curiously enough each recording three defecations, one of these being semisolid, and one fluid. As a further check, these subjects were given 800 c.c. of pasteurized *B. acidophilus* milk, they being under the impression that it was the regular *B. acidophilus* milk which gave them diarrhea. Their reactions were again indentical. Each had one abundant semifluid movement at about 6 p. m., but no more. Apparently, there was some stimulation of peristalsis, but the results were not comparable to the effects produced by the regular *B. acidophilus* milk.

TABLE 2.—PERCENTAGE OF DEFECATIONS UNDER DIFFERENT TREATMENTS

				Regular B. Acidophilus Milk		After B. Acidophilus Treatment	
Patient	No Treatment	Sterile Milk	Pasteurized B. Acidophilus Milk	First 7 Days	Total	Lactose	Nothing
1	15	43	40	71	85	..	87
2	60	30	17	86	89	..	78
3	3	0	..	57	67	96	86
4	26	43	..	57	67	71	..
5	66	57	40	86	50	..	50
6	15	..	33	87	94	77	..
7	15	..	0	100	89	93	..
8	8	..	0	43	57	..	..
9	7	..	0	30	39	..	..
10	0	..	0	30	24	..	..

In addition to the foregoing data, further evidence may be presented. Thus, careful daily records of the defecations of all patients receiving this treatment have been kept over as long a period of time as possible, even after the ingestion of milk has been discontinued. While it would be premature to state any conclusion as to the persistence of the beneficial effects, several cases may be cited of women who had previously only occasional normal evacuations, but who had frequent defecations when under *B. acidophilus* treatment. Several months after *B. acidophilus* therapy had been discontinued there was still normal defecation.

Under the final heading "after *B. acidophilus* treatment," in Table 1, the subdivisions "lactose" and "nothing," which are further subdivided in the usual manner, indicate the results obtained after *B. acidophilus* had been discontinued, and the patients either did or did not receive lactose.

The first patient in this series had defecations on nineteen out of twenty-three days, or 83 per cent., after *B. acidophilus* therapy, as compared with defecation on two out of fourteen days, or 15 per cent., before treatment. Patient 2 showed a similar improvement of about 20 per cent. Patient 3, who had only one normal movement in more than a month preceding treatment, had eleven movements in twelve days while taking lactose after *B. acidophilus* therapy had brought about a great improvement. She then stopped taking lactose, and, for almost two months after all treatment was discontinued, she had a normal defecation about every other day.

Patient 4 showed a 50 per cent. improvement, but Patient 5 showed a slight retrogression. This emphasizes the variability of the individual reaction to such treatment, and the danger in generalizing. The next two patients showed striking improvement in bowel movements, two months after the treatment had been discontinued.

These observations have not been continued over a sufficient period of time to warrant any conclusion concerning the permanence of relief from chronic constipation. However, the records of two patients not included in this series, because they left the hospital prior to this experiment, have an important bearing on this question:

One patient had eleven normal defecations in 103 days (more than three months) before treatment. Following one month's intensive *B. acidophilus* treatment, she had 185 normal defecations in 231 days, or 80 per cent., for almost eight months after discontinuing treatment, as compared with 11 per cent. originally. These total figures do not reveal the fact that during the last month the percentage was nearer 50, and that this diminution may become progressive.

Another patient had seventeen normal defecations in seventy-three days (two and one-half months). Under two months intensive *B. acidophilus* therapy, she had fifty-nine normal defecations in sixty-one days. After discontinuing *B. acidophilus*, she had 121 normal defecations in 172 days (nearly six months). In other words, the percentage is 70, as compared with 23 originally. There seems to be no decline with this patient, since her percentage for the last month has been 77.

COMMENT

Considering these two cases with those already discussed, there is here evidence to invite the belief that with some persons the relief from chronic constipation may persist long after treatment has been discontinued. Unquestionably, individuals vary greatly in their reaction to *B. acidophilus*, and there are instances of patients approximating their former constipated condition when *B. acidophilus* milk is discontinued. The complexity of factors which determine any individual's gastro-intestinal condition makes it difficult to generalize on the benefits of any single mode of treatment. The fact remains that up to this time no patient, no matter how constipated, has failed to be relieved of constipation following an intensive course of treatment with *B. acidophilus* milk and lactose.

In this connection, another noteworthy point may be mentioned: an appreciable percentage of viable *B. acidophilus* organisms was recovered from some patients, months after their ingestion had been discontinued, indicating that a true implantation had taken place. Thus, in the patient who has been longest under observation, the first of the two patients not included in the series, 25 per cent. of the total plate count of feces on whey agar were viable *B. acidophilus*, but this was not a constant finding. It may be something more than a coincidence that another earlier patient gave precisely the same percentage of viable *B. acidophilus* six months after discontinuing *B. acidophilus* milk. Two other patients previously noted, Patients 4 and 5, showed 80 per cent. of viable *B. acidophilus* seventeen and twenty-one days, respectively, after discontinuing treatment.

The data herein presented are in direct contradiction to certain general statements made by Bassler and Lutz,[4] which are unsupported by any evidence thus far published. No one recognizes the limitations of *B. acidophilus* therapy more clearly than those who have actually conducted such research as is patent in the work of Rettger and Cheplin,[5] Norman and Eggston[6] and others.

Theoretical objections, therefore, can have little validity in the face of facts.

There are now various commercial preparations of *B. acidophilus* on the market. It is unfortunate that none of these which have come to our attention warrant recommendation, since experience based on their adequate and widespread use would be of great value.

The observations here reported are being continued.

SUMMARY

Subject to the limitations of the material under consideration, the following points have been established:

1. The action of *B. acidophilus* is not a physical phenomenon, since patients receiving sterile milk were not relieved of constipation.

2. The action of *B. acidophilus* does not appear to be a strictly chemical phenomenon, since patients receiving pasteurized *B. acidophilus* milk were not relieved of constipation.

3. The action of *B. acidophilus* appears to be essentially a bacteriologic phenomenon, since patients were relieved of constipation by the ingestion of milk fermented by *B. acidophilus*.

4. Relief from chronic constipation has persisted for six months after the ingestion of *B. acidophilus* has been discontinued.

5. Viable *B. acidophilus* organisms in appreciable numbers have been recovered from the feces of patients months after the ingestion of *B. acidophilus* milk.

4. Bassler, Anthony, and Lutz, J. R.: Bacillus Acidophilus: Its Very Limited Value in Intestinal Disorders, J. A. M. A. **79**: 607-608 (Aug. 19) 1922.

5. Rettger and Cheplin (Footnote 1, first reference).

6. Norman, N. P., and Eggston, A. A.: Intestinal Infections and Toxemias and Their Biological Treatment, New York M. J. **116**: 623-626 (Dec. 6) 1922.

INTERNAL HEMORRHAGIC PACHYMENINGITIS IN INFANCY

REPORT OF FIVE CASES *

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Internal hemorrhagic pachymeningitis occurring in infancy cannot be considered a rare disease. Finkelstein,[1] in 1911, reported six cases; and had records of fifty others. Rosenberg,[2] in 1913, compiled reports of thirty-eight cases. Feer[3] saw five cases in three years. However, few cases have been reported in this country, and since 1915 relatively little has appeared in the literature concerning this disease.

The name would indicate that the process is a hemorrhagic inflammation of the inner surface of the dura. According to Rosenberg,[4] the disease was first described in France, about 1835, under the name serous cysts of the arachnoid. There has always been a controversy regarding the pathogenesis of the disease. Virchow, in 1854, advanced the so-called "primary inflammation" theory to explain its pathogenesis. Prior to that, pathologists had considered the inflammation, when present,

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1. Finkelstein, cited by Rosenberg.
2. Rosenberg, O.: Berl. klin. Wchnschr. **50**: 2272, 1913.
3. Feer: Cor.-Bl. f. Schweiz. Aerzte. **45**: 598, 1915.
4. Rosenberg, O.: Ergebn. d. inn. Med. u. Kinderh. **20**: 549, 1921.

as secondary to the hemorrhage, and occurring in the process of organization.

Boeckmann [5] investigated a series of cases in which death followed operations on the brain or meninges, and in none was there a hemorrhagic pachymeningitis. He concludes that it takes more than trauma and aseptic hemorrhage to produce the disease. Wohlwill,[6] after studying the gross and microscopic anatomy, concluded that: 1. It is a primary proliferation of the subendothelial tissue, probably following a previous lesion of the endothelium. Fibrinous and serous exudations as well as hemorrhage are only accidental accompanying processes. 2. In neither the traumatic cases nor those which accompany a hemorrhagic diathesis does the histologic structure of the membrane speak for an origin through organization of a primary hemorrhagic effusion.

Marie, Roussy and Laroche [7] tried to produce the disease experimentally. They employed dogs and rabbits, and injected them subdurally with (*a*) whole blood, (*b*) blood plus a killed suspension of staphylococci, and (*c*) a mixture of fatty acids and sodium nucleinate. With the last method they obtained in several instances a picture resembling internal hemorrhagic pachymeningitis. They infer from these findings that it is not a primary hemorrhage that produces the disease. Numerous other authors also oppose the primary hemorrhage theory.

Another theory has been offered by a third group, represented mainly by Jores and Laurent. These authors describe the condition as a primary noninflammatory proliferation of the subendothelial capillary layer. The nature of such a process has no parallel in human pathology. Rosenberg [4] goes so far as to say that he was unable to find any fibrin in any of his cases; there were no inflammatory cells, and no young connective tissue cells in the early stages. Also, the fluid from the cysts has the character of a transudate and not of an exudate. He says that he cannot agree with the descriptions found in most of the textbooks of pathology.

The picture described in most of the textbooks is this: There is a proliferation of the endothelial layer on the inner surface of the dura. In the early stage, a few leukocytes and some fibrin may be present. Later, fibroblasts and new capillaries grow out from the subendothelial layer, which is very vascular. The capillaries, being thin walled, are easily ruptured. The hemorrhages may be minute, and if so are soon resorbed, leaving only a brownish pigment; but if they recur, the membrane in time attains considerable thickness. When the hemorrhage is more extensive, the membrane is pushed away from the dura; and, as the cellular elements are digested or carried away, there remains a cyst containing a yellow fluid. A new membrane then forms on the dura, and if the process is repeated there results a lamellated structure between the layers of which are collections of blood in various stages of resorption. The site of this process is most often the midportion of the convexity, and it is usually bilateral.

The acute infections, syphilis, tuberculosis and trauma are perhaps most frequently given as the primary etiologic factors. The so-called "hemorrhagic diathesis group," including scurvy, leukemia, pernicious anemia, purpura and hemorrhagic disease of the newborn, are often blamed. Schwartz [8] reported a case in which the meningococcus was found. Hemolytic streptococci have occasionally been implicated. Chronic nutritional disturbances have been believed to play an important rôle. Nearly all of Rosenberg's cases occurred in institutional infants who had been artificially fed since birth. He says that the condition is rare in private or dispensary practice. In reading the reports of various authors, we find that in a majority no definite etiology could be assigned. Negative Wassermann reactions and tuberculin tests, and sterile blood and spinal fluid cultures are the usual findings.

Perhaps the most plausible theory at present is that of Rosenberg, who believes that internal hemorrhagic pachymeningitis is due to thrombosis of the cavernous sinus, as the result either of an infection or of a marantic condition. In a large percentage of his cases there was a bloody nasal discharge a short time before the disease manifested itself. Diphtheria bacilli were usually obtained by culture. However, in some of the cases the rhinitis was syphilitic in origin. The inflammatory process extends from the ethmoid vein to the ophthalmic and thence to the cavernous sinus. The anatomic picture of hemorrhagic pachymeningitis he attributes to a passive congestion due to the obstruction of the veins emptying into the sinus; namely, the middle meningeal, ophthalmic, central vein of the retina, ethmoid and supra-orbital. The hemorrhages into the retina and the usual localization of the process in the region drained by the middle meningeal vein are beautifully explained by this theory. He admits, however, that there are certain symptoms one would expect to follow in the course of this thrombosis, which are not usually present with the pachymeningitis, and, further, that the thrombosis has never been found by him at necropsy, even though he has diligently searched for it.

The symptoms may be gradual or sudden in onset. Generally speaking, they are those of increased intracranial pressure or meningeal irritation. Vomiting and convulsions are perhaps the most common reasons for bringing the patient to the physician. Bulging fontanel, enlargement of the head, cervical or general rigidity, increased reflexes, muscular twitchings, paralysis, hyperesthesia, somnolence, pressure pulse and changes in the character of respiration are symptoms which are mentioned. Fever, if present, is usually not high except just before death. The most characteristic finding is the retinal hemorrhage, which is present in a majority of the cases and is certainly rare in other conditions of later infancy. There may be choked disk or optic atrophy. The spinal fluid is normal, or contains evidence of old or recent hemorrhage. Puncture of the anterior fontanel outside the longitudinal sinus is a procedure on which pediatricians have laid much stress. To obtain by it a yellow or bloody fluid practically makes the diagnosis certain. This fluid, and the same is true when it is obtained from the lumbar subarachnoid space, does not clot on standing, although there may be a small fibrin clot or pellicle. Briefly, then, if an infant more than 4 weeks old, usually between the ages of 6 and 18 months, has symptoms of markedly increased intracranial pressure, often more acute than with a tumor, and has a normal spinal fluid, one of the first things to consider is internal hemorrhagic pachymeningitis. The presence of retinal hemorrhages makes the diagnosis practically certain, and a positive fontanel

5. Boeckmann: Virchows Arch. f. path. Anat. **214**: 380, 1913.
6. Wohlwill, F.: Virchows Arch. f. path. Anat. **214**: 388, 1913.
7. Marie, Roussy and Laroche: Comp. rend. Soc. d. biol. **74**: 1303, 1913.
8. Schwartz, A. B.: Pachymeningitis, Am. J. Dis. Child. **11**: 23 (Jan.) 1916.

puncture is pathognomonic. A yellow subarachnoid fluid or one containing red blood cells is very suggestive. If the disease has been going on for some time, there will probably be enlargement of the head.

The mortality of this disease per se is said to be very low. The infants, however, succumb readily to intercurrent infections, especially bronchopneumonia. Goeppert[9] thinks that the appearance of blood in the spinal fluid warrants a bad prognosis. Feer found a bloody fluid in all his cases, and still believes that in most of them recovery occurs. Many of the infants who live through the attack carry a permanent disability, such as chronic hydrocephalus, imbecility, blindness, deafness, paralysis, spasticity or speech defect. D'Espine[10] reported a case in which the patient left the hospital apparently in good condition, but returned a few years later with typical Little's disease. Rosenberg, who, in his early paper, gave a good prognosis, has changed his opinion. He was able to locate a small number of his patients eight or nine years after the disease, and found that 70 per cent. had some defect. He says that the severity of the disease bears no relation to the after-effects. Some with the most severe symptoms were later found to be normal, and those with mild symptoms showed serious defects.

The treatment is mainly symptomatic. In adults, surgery has been employed, and favorable results have been reported. In infants, drainage of the fluid by repeated punctures through the anterior fontanel has not resulted in much improvement, and Finkelstein says that it may be harmful. Gelatin injections have been used in an attempt to control the bleeding. In light of our present knowledge, it is logical to supplant this with intramuscular injections of whole blood or with transfusions. If syphilis is suspected, of course antisyphilitic therapy should be instituted.

REPORT OF CASES

The five cases here reported were observed in the pediatric service of Lakeside Hospital in the last three years:

CASE 1.—A. L., a white boy, aged 20 months, entered the hospital, Oct. 29, 1919, with a history of convulsions for one month which had been becoming progressively more severe. On admission the child was in deep coma, and breathed only four or five times a minute. He did not respond to any external stimuli. The extremities were cold and cyanotic. At this time there were no localizing symptoms, and the fontanel, though open, was not bulging. There was a bloody discharge from the nose. Symptoms which might be construed as due to syphilis were a depressed nasal bridge and a deformity of the left forearm. The latter, however, appeared to be due to a healed fracture of both the ulna and the radius. There was an abrasion over the left eye, evidently from a mild injury.

During the first few days the child had numerous severe convulsions. Lumbar puncture at first yielded a clear fluid containing a few unchanged red cells. A subsequent puncture of the cisterna magna gave a clear fluid free from cells and globulin. An attempt was made to obtain blood from the longitudinal sinus, and a yellow fluid was encountered which did not clot on standing. Ophthalmoscopic examination revealed at first a hemorrhage near the left disk. The right retina was normal. A few days later there were hemorrhages in both retinas, and slight edema of the disks. The "capillary permeability test" revealed a somewhat increased number of petechiae. Nose and throat cultures were negative for diphtheria bacilli.

9. Goeppert: Jahrb. f. Kinderh. **61**: 51, 1905.
10. D'Espine: Cor.-Bl. f. Schweiz. Aerzte. **45**: 1590, 1915.

November 1, there was some general improvement. However, a paresis of the right side could be made out, and the boy was apparently blind.

During the next few weeks there was gradual progressive improvement. November 12, clear yellow fluid was again obtained by fontanel puncture. The hemorrhages were gone from the right retina, November 11, but persisted in the left eye until the early part of January. Vision returned apparently to normal. The Wassermann reactions on the fluid obtained by fontanel puncture were always negative; but the clear spinal fluid, on two occasions, gave a four-plus reaction when 0.5 c.c. was used, although the result was negative with 0.3 c.c. Later two negative tests were obtained in all dilutions. There were five negative Wassermann tests on the blood. Red mercuric iodid and potassum iodid had been given as a provocative soon after admission.

He was discharged, Feb. 25, 1920, in good physical condition, and weighed 8.7 kg., which was 2.1 kg. above his weight on admission. The parents refused to bring him to the dispensary, and he was not seen again.

The significant features of this case are as follows: The suggestion of syphilis afforded by the depressed nasal bridge was not supported by the serologic findings even though provocative therapy was employed. The blood in all of five, and the fontanel puncture fluid in two, instances were negative. The spinal fluid, however, on two occasions, while negative for amounts of 0.1, 0.2 and 0.3 c.c., was two plus for 0.4 c.c. and four plus for 0.5 c.c. Both preceding and following these tests, negative reactions were obtained for all amounts. The bloody nasal discharge suggests diphtheria as a possible etiologic factor, especially as Rosenberg considers this infection to be of the greatest importance in the causation of pachymeningitis. Cultures were negative, though this, of course, does not absolutely exclude diphtheria.

CASE 2.—M. H., a white girl, aged 10 months, was admitted to the hospital, Feb. 19, 1921, because she had been vomiting and having convulsions for the preceding month. The vomiting was described as projectile in type, and usually occurred immediately after feeding. The attacks of convulsions occurred only about once a week, but had been becoming more severe. The child had lost weight. Recently there had been some nasal discharge. The history showed that she had not thrived either at the breast or when taking condensed milk. She had held up her head at 4 months, and was now just beginning to sit up. The family history was negative except that one brother died of convulsions at the age of 10 days.

The infant was markedly undernourished, and weighed only 3.5 kg. She appeared extremely ill. The extremities were cold and cyanotic. The anterior fontanel was 4 cm. in diameter, but there was no bulging. There were no definite neurologic findings. A few râles were heard in the bases of the lungs posteriorly. Shortly after admission, she had a series of severe convulsions. Lumbar puncture yielded a bloody fluid. On centrifuging, the supernatant portion was clear and of a lemon yellow color. It did not clot on standing. The Wassermann reaction on this was negative, and cultures remained sterile. Nose and throat cultures were negative for diphtheria bacilli. Ophthalmoscopic examination revealed hemorrhages in both retinas. The patient continued to have convulsions, and died about twelve hours after admission. Before death she vomited "coffee ground" material.

The necropsy was held the next morning. When the skull was opened, the dura was injected. Beneath the dura on both sides, over the vertex, there was a flat blood clot, which was adherent in some areas to both the dura and the arachnoid. The dura was slightly thickened, and numerous petechial hemorrhages were present on its inner surface. There was some blood beneath the arachnoid. The thymus was rather large, and contained collections of fluid blood in both lobes. There was congestion of the bases of both lungs. Microscopically, the dura showed hemorrhages on its inner surface and evidence of a mild chronic inflammation. The anatomic diagnosis was internal hemorrhagic pachymeningitis.

CASE 3.—R. L., a boy, aged 1 year, was admitted, Sept. 28, 1921, because of paralysis of the left side following a fall. Three days previously the patient fell from a table. He cried a great deal, but showed no untoward symptoms, and the mother noticed no local injury. The next day he was standing by the door and fell, striking the right side of his head posteriorly. This fall was immediately followed by a convulsion, which lasted an hour. The left side of the body was thereafter paralyzed, and he did not regain consciousness. He vomited several times. The history brought out the fact that following birth he had been blue for several days, and was said to have had pneumonia. He was breast fed for three weeks, and was then given dilutions of raw milk. No orange juice had been given. He had gained regularly in weight, and had always been well except that for the past month the stools had been rather frequent.

The patient was a well developed and nourished child with excellent color and turgor. He weighed 7.5 kg. There was a flaccid paralysis of the left side. The head was drawn to the right, and there was conjugate deviation of the eyes toward that side. The anterior fontanel was normal in size, and there was no bulging. A small area of edema and swelling was found on the right occiput. Both eyegrounds showed numerous hemorrhages. Roentgenograms disclosed no fracture of the skull nor evidence of scurvy or rickets in the extremities. The spinal fluid contained a small amount of fresh blood, probably due to trauma in withdrawal, as the supernatant fluid was clear after centrifuging. This fluid gave a negative Wassermann reaction. No fontanel puncture was made because the parents objected. Nose and throat cultures were negative for the diphtheria bacillus.

The next day he had at first muscular twitching, and then generalized convulsions, which lasted several hours. The temperature at this time ranged between 39 and 40 C. The white blood cells totaled 14,000. The urine was negative. The capillary permeability test was negative. Intramuscular injections of the parents' blood were given although the coagulation time was seven and one-half minutes.

Improvement began the next day and continued until he was discharged against advice, October 7. The temperature had dropped to normal, and he was taking his feedings. The retinal hemorrhages were less distinct at this time. A communication from the parents one month later stated that, although weak, he could move his left arm and leg, and vision was apparently normal.

The history strongly suggests that trauma was a factor in producing the acute picture of convulsions and paralysis in this case. The history relates two falls—one three days before the development of symptoms, and the other immediately before the appearance of the convulsions. It seems probable that the second fall was not responsible for the development of the convulsion, but was a part of the general picture produced as a result of the injury received at the first fall.

The history of birth hemorrhage is also very suggestive. The parents stated that the physicians in charge had time and again despaired of the infant's life because of the attacks of cyanosis and apnea that he had for several days after birth. A wrong diagnosis at this time is not uncommon. Since, however, no punctures were made, we can only conclude that the history strongly suggests that this patient was a victim of birth hemorrhage. If this is correct, then the field was prepared, and the first fall was the exciting cause of the pachymeningitis.

CASE 4.—L. S., a white boy, aged 4 months, was brought to the emergency ward of the Cleveland City Hospital, Aug. 20, 1922, after an accident in which he was thrown from an automobile. The mother stated that immediately afterward he was blue for a short time and that his head was "out of shape." Examination revealed a small contusion of the scalp, and a separation of some of the bones of the skull along the suture lines. He was unconscious for a few hours, and vomited nearly everything taken for twenty-four hours. Roentgen-ray examination revealed no fractures. No other symptoms were noticed, and he was discharged, August 24. Four days later the mother brought him to the Lakeside dispensary with the complaint that he had vomited and was irritable on the preceding day. She insisted that his head was "out of shape." He was admitted to the pediatric service of Lakeside Hospital. More historical detail revealed that at the time of his birth the mother was in labor thirty-six hours and that instruments had been used. One sister was suffering from Little's disease.

On admission, the child's head measured 47 cm. in circumference, and his chest 45 cm. The lambdoid suture on the left and the coronal and frontosphenoid suture on the right measured about 0.5 cm. in width, owing to separation of the bones. The anterior fontanel was rather tense, but did not bulge. The temperature was 39 C. The knee-jerks were active, and that on the left was possibly slightly increased. Otherwise the child was in excellent physical condition, was being breast-fed, and weighed 8 kg. at the age of 4 months.

On puncture of the anterior fontanel to obtain blood, a yellow fluid was encountered which contained about one twentieth of its volume of red corpuscles. Twenty-five cubic centimeters was removed at this time. The fluid did not clot on standing, but a small pellicle formed. Shortly after this puncture the child seemed more comfortable, and smiled repeatedly. Ophthalmoscopic examination revealed normal eyegrounds.

The patient remained in the hospital for eighteen days without marked change in condition. Further examination of the retinas failed to reveal any abnormalities. Several more punctures of the fontanel were performed, and as much as 50 c.c. of fluid was withdrawn at one time without completely emptying the cavity. No convulsions were observed, and the fontanel never distinctly bulged, although a change in tension could be made out after the punctures. Fever was present throughout the entire stay at the hospital, and varied from 37.5 to 39 C. The laboratory work is summarized below.

The child was readmitted, October 6, because of vomiting, and enlargement of the head; symptoms which, according to the mother, had appeared rather suddenly in the preceding two days. The head was now 48.5 in circumference, and there was some bulging of the anterior fontanel and a fullness along the sutures. The temperature was 39 C., and the child was very irritable. The eyegrounds were normal, and there were no localizing neurologic signs. Puncture of the fontanel was immediately done, and 200 c.c. of yellow fluid was withdrawn. The temperature dropped somewhat, and the irritability became less marked. Because he was nursing and it was difficult for the mother to come to the hospital, he was discharged, October 10. He attended the dispensary daily thereafter.

October 16, the mother reported that he had vomited again and that there had been muscular twitchings. He was again admitted to the ward. He seemed much more ill now than before. The temperature was 39 C., and the leukocyte count, 37,000. On the next day he developed a swelling of the left side of the scalp which was thought possibly to be a cellulitis. There was a bloody nasal discharge. Culture produced no diphtheria bacilli. The spinal fluid was normal. Puncture of the fontanel was not done. At this time several mild convulsions were noted, and Cheyne-Stokes breathing was present for a short time.

Moist heat was applied to the swelling, and it quickly subsided. The temperature dropped to normal, and the child was discharged, October 20. Since that time he has reported to the dispensary, has shown no fever, the general condition has been good, and there has been no particular change in the condition of the head.

August 29, white blood cells totaled 25,100; hemoglobin, 70 per cent. Urine examination gave negative results.

August 30, white blood cells totaled 25,250; hemoglobin, 70 per cent.; red blood cells, 5,940,000; polymorphonuclears, 34 per cent.; lymphocytes, 60 per cent.; transitionals, 3 per cent.; large mononuclears, 3 per cent.; eosinophils, 0; basophils, 0.

August 31, the blood clotting time was 5 minutes, 15 seconds; bleeding time, 6 minutes, 20 seconds. The capillary permeability test gave normal results. Fluid from fontanel puncture contained, for each hundred cubic centimeters: calcium, 6.5 mg.; phosphorus, 5 mg.; potassium, 16.3 mg.; sodium, 311 mg.; protein, 0.133 per cent. The intracutaneous tuberculin test (1:1,000) was negative.

September 4, the intracutaneous tuberculin test (1:1,000) was negative.

September 5, the spinal fluid Wassermann reaction was negative.

September 8, the blood serum contained: calcium, 10.9 mg. for each hundred cubic centimeters; phosphorus, 5.7 mg.; protein, 7.79 per cent. Fluid from fontanel puncture contained: calcium, 7.2 mg. for each hundred cubic centimeters; phosphorus, 4.9 mg.; protein, 1.27 per cent.

September 13, fluid obtained by fontanel puncture contained protein, 1.85 per cent. The Wassermann test on this fluid was negative.

October 6, the blood clotting time was 4 minutes, 20 seconds; bleeding time, 5 minutes, 20 seconds. The blood serum contained: calcium, 9.7 mg. for each hundred cubic centimeters; phosphorus, 4.8. Fluid from fontanel puncture contained: calcium, 7.9 mg. for each hundred cubic centimeters; phosphorus, 5 mg.; protein, 2.4 per cent.

October 17, the white blood cells totaled 37,750. Urine examination revealed a faint trace of albumin.

There can be no question that in this case trauma was the deciding factor in producing the acute picture of pachymeningitis. It is even possible that the trauma sustained in the automobile accident was the entire cause of the development of this condition, since nearly ten days had elapsed between the accident and the finding of pathognomonic symptoms or internal hemorrhagic pachymeningitis. However, this conception cannot be considered certain, as the history contains the fact that the mother was in labor for thirty-six hours at the birth of this child, and that instruments were used. A further important point is contained in the history, namely, that an older sister is suffering from Little's disease, a condition due in most instances to brain hemorrhage at birth. The head on admission was misshapen, a condition which, according to the mother, developed directly and immediately as the result of the automobile accident. The mother makes the statement that when she picked up the child from under the overturned automobile the child seemed as if dead, and its head was out of shape. On admission there was noticed a separation, to a distance measuring approximately 0.5 cm., of the lambdoid suture on the left side, and of the coronal and frontosphenoid sutures on the right side. These changes were in all probability due to the direct effect of the accident and not to the development of a large collection of fluid within the skull.

CASE 5.—E. R., a colored boy, aged 2 months, was admitted to the outdoor ward of the Babies' Dispensary and Hospital, Sept. 11, 1922, because of convulsions. These began on the day of admission, and the mother said that he had previously been perfectly normal. The only thing of importance in the past history was that the baby was precipitated head first into the bucket before the physician arrived for the delivery. The baby was breast fed.

Examination revealed a well developed infant, weighing 5.2 kg. Intermittent convulsions lasting a few minutes each were observed. Between convulsions there was considerable spasticity of the extremities. The fontanel bulged slightly. The circumference of the head was 40 cm.; that of the chest, 38 cm. There were hemorrhages in the left eyeground; the right was normal.

September 13, the clotting time was 5 minutes and 30 seconds, and the bleeding time 4 minutes.

September 14, the serum calcium was 7.6 mg. for each hundred cubic centimeters, the phosphorus, 4.7 mg., and the protein, 5.8 per cent.

A puncture of the left side of the fontanel, made, September 15, yielded about 20 c.c. of bloody fluid. This contained about one tenth of its volume of red corpuscles. The supernatant fluid was yellow, did not clot, and gave a strong reaction for bile pigment. The child continued to have convulsions, and on the next day another puncture of the fontanel was performed and more yellow fluid withdrawn. After this procedure the fontanel was less tense. This fluid contained 3.6 per cent. protein, 6.3 mg. calcium and 5 mg. of phosphorus for each hundred cubic centimeters. The Wassermann reaction on this fluid was negative. The intracutaneous tuberculin test was negative.

The temperature on the third day after admission reached 39 C. and then gradually dropped to 38 C. September 21, lumbar puncture yielded a clear fluid, without cells or globulin, which gave a negative Wassermann test. On this day the clotting time was 6 minutes and the bleeding time was 4 minutes.

The infant continued to have convulsions at irregular intervals until the latter part of October. During the subsequent month, no convulsions have been observed, and there has been no spasticity or change in reflexes. The general condition was good, and he gained in weight. October 27, ophthalmoscopic examination revealed that the retinal hemorrhages had disappeared completely.

SUMMARY

1. Five cases of internal hemorrhagic pachymeningitis have been observed in this clinic within a period of three years. This corroborates the statements of Finkelstein and Rosenberg that this disease is more common in infancy than is generally believed.

2. From the standpoint of etiology in our cases, infections, especially syphilis and diphtheria, can be excluded in every instance except in Case 2, in which syphilis may by some be considered to have been a possible factor.

3. From the standpoint of etiology, a poor state of nutrition can be positively excluded in three of our five patients; two were exceptionally well developed and nourished infants, and the third was also in a good state of nutrition. The other two patients were in a very bad state of nutrition, but it is just as probable that this was the result, as that it was the cause, of the development of pachymeningitis.

4. From the standpoint of etiology, trauma can be implicated as a factor in four of the five cases. It would seem that subacute pachymeningitis from birth hemorrhage, rendered acute by further physical injury, would explain the development in some of our cases. In certain groups of infants, there may be a certain predisposition toward the development of pachymeningitis.

5. The prominent symptoms in these five cases which correspond with those described in the literature were:

(*a*) Retinal hemorrhages in four cases. In the one in which they were absent there was the largest collection of fluid in the subdural space.

(*b*) A positive fontanel puncture. This was obtained in the three cases in which it was performed. In one case a characteristic fluid was obtained by spinal puncture. In the fifth, puncture was not performed because of the attitude of the parents. As these two children were each about 1 year of age, and retinal hemorrhages were present, it is probable that a fontanel puncture, if made, would have given positive results.

(*c*) Convulsions. These were present in every case; but since convulsions occur as a result of other injuries and conditions, their appearance is suggestive but not pathognomonic.

(*d*) Bulging fontanel. This symptom was absent throughout the period of observation in three cases; and in a fourth the fontanel did not bulge until the second admission, when it bulged slightly; in the fifth case there was slight bulging on admission. In other words, the absence of a bulging fontanel does not speak against internal hemorrhagic pachymeningitis. A general state of collapse, or widening of the sutures, may be sufficient to counteract the encroachment on the intracranial space by the development of a pachymeningitic cyst.

(*e*) Enlargement of the head. This symptom was not definitely present in any of our cases. In only one case was there possibly some enlargement.

(*f*) Nasal discharge. This was present in three cases, and in two of these it was bloody in character. In one of these patients, however, the discharge did not develop the bloody character until long after marked evidence of the presence of a pachymeningitis had been observed. As no evidence of the presence of syphilis or diphtheria was found in any of our cases, it may be concluded that the nasal discharge was a coincidence or a result of the pachymeningitis, and not a symptom of an infection responsible for the development of this disease.

6. In addition, we made the following observations, which may possibly add to the present knowledge of the disease:

(*a*) In two of the cases in which the calcium content of the fluid obtained through fontanel puncture was determined, it was found to be decidedly lower than that of the blood serum; whereas the inorganic phosphorus content of the fluid and the blood serum was practically the same. Since these results are the same as the figures usually obtained by determinations on whole blood, it would seem logical to conclude that the fluid in these subdural cysts is blood, unaltered except for the solution or digestion of all or a part of the red corpuscles. This conclusion, however, is not supported by the amounts of sodium and potassium, which were the same as in serum; nor by the percentage of protein, which showed great variation.

(*b*) The coagulation time and the bleeding time were normal in the three cases in which the tests were performed.

CONCLUSIONS

1. Internal hemorrhagic pachymeningitis is more common in infancy than is ordinarily believed.

2. Trauma at birth or later, or both, seems to have been the most important etiologic factor in our cases.

3. Convulsions, retinal hemorrhages and a positive fontanel puncture form a pathognomonic symptom-complex in internal hemorrhagic pachymeningitis. A positive fontanel puncture alone may be considered pathognomonic, as may also retinal hemorrhages, provided the latter occur after the age of 3 months.

4. In any case in which symptoms indicate the presence of increased intracranial pressure or cerebral irritation, internal hemorrhagic pachymeningitis should be considered.

5. Marasmus or severely disturbed nutrition is not necessary for the development of internal hemorrhagic pachymeningitis, as three of our five cases occurred in well developed infants.

Plan to Decrease Blindness and Power Press Accidents.—The American Engineering Standards Committee has formulated the first safety codes for power, foot and hand presses that have been prepared in America. While no national statistics of power press accidents are available, it is the opinion of safety engineers that the high speed punch or forming press is one of the most dangerous machines in industry, and that hundreds of fingers, hands and arms are cut off or mutilated in these machines every year. The National Committee on the Prevention of Blindness says there are approximately 15,000 persons in the United States who have been blinded by industrial accidents, which is almost 15 per cent. of the blind population of the country. Because of this, the U. S. Bureau of Standards cooperating with the War and Navy departments prepared an eye safety code, which for several years has been studied by the Engineering Standards Committee and has been revised by this body.

POSTINFLUENZAL CHRONIC PNEUMONITIS

A CONDITION COMMONLY MISTAKEN FOR PULMONARY TUBERCULOSIS, AND FREQUENTLY FOR HEART DISEASE

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At a conference on tuberculosis which I recently attended, three papers dealing with the differential diagnosis of pulmonary tuberculosis from three different points of view were read. None referred to a condition which I have found most frequently mistaken for pulmonary tuberculosis among patients presenting symptoms suggestive of tuberculosis who have been sent to me for special examination. I refer to a chronic postinfluenzal pulmonary disorder of long duration. A semichronic pneumonic sequel of influenza was recognized just after the epidemic of 1918. But the disorder I refer to is found in patients who are presenting themselves now, four years and more after the epidemic, with a history of continuous pulmonary disease since that time.

Many of these patients have at one time or another been under treatment for supposed heart disease. All of them have been under more or less continuous treatment for supposed pulmonary tuberculosis ever since they had influenza, and were sent to our hospital with the diagnosis of probable pulmonary tuberculosis.

SYMPTOMATOLOGY

General Condition.—These patients all complain that they have not been well since they had influenza; they are tired and weak, and lack staying power and the ambition to work. Some of them have tried to work from time to time, but could not keep at it. They all give a history of medical care in hospitals and sanatoriums a good deal of the time since the epidemic.

Great loss of weight is unusual, but they are often underweight. They usually look fairly well nourished. Occasionally, there is a slight degree of emaciation. There is seldom any serious loss of appetite, and there is never the marked distaste for food sometimes seen in the tuberculous. Night sweats are uncommon. There is nearly always a marked degree of nervous irritability. The patients are easily excited, the condition being sometimes so severe as to interfere with their ability to make a living.

Pulmonary Symptoms.—Cough, slight or severe, continuous or intermittent, is always present. It is usually more troublesome in the morning and in damp weather. There is nothing especially characteristic about it. All patients raise some sputum, which may be slight in amount or abundant. Occasionally, the sputum is fairly abundant after a paroxysm of coughing, and then there will be no more for some time. There is a mild degree of bronchiectasis. Frequently, small amounts of blood or blood-tinged sputum are raised, but I have never observed a real hemorrhage, even a slight one, in these patients. There is nearly always pain or soreness in some part of the chest at times. There is nothing characteristic about the pain.

Wheezing, which is so marked in some patients that the condition is diagnosed as asthma, is absent in others.

Cardiac Symptoms.—All patients complain of shortness of breath and rapid and violent pumping of the

heart on slight exertion. Nearly all have attacks of dizziness, especially when excited or after sudden activity of one kind or another. Sharp pain, localized at the apex, or a dull ache over the precordia, especially after exertion, is common.

PHYSICAL EXAMINATION

General Condition.—The appearance of these patients gives no clue to their condition. Sometimes, they "look sick," they have a tired drawn expression and the skin has an unhealthy appearance; but, as a rule, they look pretty well.

Lungs.—Examination of the lungs yields a variety of findings, with changes slight in extent and character, or marked, and appearing to affect the whole of both lungs.

The chest usually shows no change in shape; but there are exceptions. I recall only one case in which there was infraclavicular and supraclavicular depression. I now have under observation one patient with a very marked "barrel chest."

The expansion of the lungs, so far as this can be judged by the motility of the chest on respiration, is usually good. In cases presenting pleural adhesions, the diaphragm or the whole lung on one side will sometimes show a diminished excursion.

Resonance may be good throughout; in some cases, there is even hyperresonance. In perhaps half the cases, there is some dulness over one or both bases behind. There may be a slight dulness at the apex; but usually the apexes show little or no change. Changes in resonance from day to day are sometimes observed.

The breath sounds are usually harsh, rough and noisy, and expiration may be prolonged. Sometimes, there is pleural thickening, and the breath sounds are distant. Spoken and whispered voice sounds show the corresponding change. No marked change in tactile fremitus can usually be found.

Noisy squeaks, and sibilant and sonorous râles are usually heard. The râles may be only at the bases, or may be scattered throughout the lung. It is unusual to find them confined to the apexes; but occasionally this is the case. It is very unusual to find the râles confined to one apex. I have never observed a case in which the burst, or shower, of medium moist râles, so typical of tuberculosis, could be heard at the apex persistently after expiratory cough. Occasionally, there is evidence of a slight friction rub on some spot at the base.

Roentgen-Ray Examination.—Sometimes there are apparently normal findings, but sometimes definite pleural thickening, corresponding to that found on physical examination, is reported. More commonly, the roentgenologist recognizes that the lungs do not look normal, but will not make a definite diagnosis. The reports speak of rather diffuse thickening, fairly extensive peribronchial thickening, dilatation of the entire bronchial tree, tortuous and interwoven bronchi, moderately thickened bronchi, small areas of increased density, infiltration of the lower lobes, mottling at the base, and moderate thickening of the hilum. They sometimes say that bronchitis cannot be ruled out, tuberculosis cannot be ruled out, or peribronchial tuberculosis cannot be ruled out. On two occasions, roentgen-ray diagnosis of possible tuberculosis at the base was made. In one case, roentgen-ray reports indicated findings suggestive of old conglomerate tubercles, but no evidence of active parenchymatous tuberculosis. On two occasions, the roentgen-ray diagnosis of pulmonary syphilis was suggested. The roentgen-ray findings vary from time to time in the same patient. Different observers sometimes interpret the findings differently; but we almost never get a definite diagnosis of apical tuberculosis in the reports of these cases. A special expert study of the findings in this condition is much needed.

Temperature.—Usually, the temperature is about normal. In some cases, the afternoon temperature will occasionally rise a little above 99 F.

Sputum.—There is nothing characteristic about the sputum. Tubercle bacilli are absent. Pus cells are often abundant. Curschmann's spirals and Charcot-Leyden crystals have not been found. We have not found influenza bacilli. On one occasion, an organism resembling pneumococcus, which was pathogenic for mice, was found.

Etiology.—In all these patients the onset of the condition dates immediately from a severe attack of influenza—practically always complicated by pneumonia. The condition may, indeed, be described as a pulmonary involvement accompanying influenza which has never fully healed.

NATURE OF THE PATHOLOGIC PROCESS

As I have not seen any fatal cases, the pathologic process cannot be accurately described; but from the physical findings there must be pathologic changes of some sort in the lungs. The changes are rather diffuse; they may be confined to the bases, but rarely, if ever, to the apexes. Bronchitis may be in evidence. A slight degree of bronchiectasis is sometimes present. Emphysema is sometimes marked. Some degree of diffuse fibrosis may be present. Pleural thickening, especially at the base, is common.

TYPES OF THE DISEASE

In most of the cases all, or almost all, of the symptoms and signs described will be found to some extent. That is, we do not see pure cases of asthma, bronchitis, bronchiectasis, pleurisy, or effort syndrome. But a case usually falls into one or another group, according to the prominence of certain signs and symptoms, and may be described as of the asthmatic type, the bronchiectasis type, the bronchitis type, the effort syndrome type, or the type presenting chiefly pleural involvement.

COURSE OF THE DISEASE

There seems to be no great change in the condition from year to year, nor are there "ups and downs," so frequently seen in tuberculous patients, as the result of change of environment.

DIFFERENTIAL DIAGNOSIS

Tuberculosis.—The course of the disease seems more even than that of tuberculosis; the patients never seem to grow progressively worse. Toxic symptoms, if present, are those of effort syndrome and general nervous irritability, and are unlike those seen in tuberculosis.

The process almost never localizes in one or even in both apexes as in tuberculosis; when localized, the process is at the base; when diffuse and extensive, the changes involved are not so great or of the same character as in tuberculosis, so that it is usually easy to recognize that we are not dealing with tuberculosis. While the roentgen-ray findings are not usually clear and definite, at least they do not indicate definite apical tuberculosis. The absence of tubercle bacilli in the sputum on repeated examinations may be helpful.

But the most important points of evidence as to the proper diagnosis are (1) the history of severe influenza and pneumonia continued into a chronic, nonprogressive

pulmonary disorder; and (2) the entire absence of the burst or shower of fine to medium moist râles at the apex after expiratory cough, so characteristic of pulmonary tuberculosis.

Heart Disease.—Practically all of these patients exhibit the signs and symptoms of effort syndrome. Nearly all of them complain of dyspnea on slight exertion, palpitation, pain around the heart, and tachycardia. When, in such cases, a systolic murmur is heard—and this is common—with perhaps an occasional extrasystole, the physician not familiar with effort syndrome will often make the diagnosis of heart disease. But further examination will show the lively reflexes, tremors of extended fingers, marked respiratory sinus arrhythmia, excitability, and other evidence of nervous instability characteristic of effort syndrome.

I have never known one of these cases to be diagnosed as cardiac syphilis; but the symptomatology in those cases with prominent effort syndrome and less prominent pulmonary symptoms might suggest the possibility of this condition. In many of the cases, the second heart sound seems slightly prolonged and has a slight puffy quality along the left border of the sternum, especially toward the end of expiration, probably due to rapid reduplication of the second sound. The history of the case, the negative Wassermann reaction, and the absence of an aortic diastolic murmur and of any other evidence of syphilis, serve to rule out cardiac syphilis.

I have never found evidence of organic heart disease in any of the patients.

Hyperthyroidism.—The nervous irritability and tremor are sometimes prominent enough to lead us to determine the basal metabolism; but with no evidence of exophthalmos, thyroid enlargement or increased basal metabolism, hyperthyroidism can be ruled out.

Asthma.—Sometimes emphysema and wheezing are marked, and the patients have attacks which they describe as asthmatic. Three cases have recently been referred to me with the diagnosis of asthma. But the wheezing is more or less continuous; perhaps in mild form when the patient is quiet, and in severe form in attacks resembling asthma after too strenuous activity. These patients do not have the typical sudden and unexplainable attacks of asthma with periods of complete relief between attacks. They do not show sensitiveness to test proteins, and they do show the signs and symptoms already described which are not present in true asthma.

Bronchiectasis.—Some of these patients show the signs and symptoms of bronchiectasis; but the bronchiectasis is of a mild type, and evidence of other forms of pulmonary involvement is present.

INCIDENCE

It is difficult to make any definite statement as to the frequency with which this condition occurs. Figures as to the number of cases that I see[1] would probably give a wrong impression as to how common the condition is, for as chief of medical service of a large clinic, I have referred to me the more puzzling cardiac and pulmonary borderline cases in greater proportion than they occur in the general run of patients.

COMMENT

It is commonly stated that influenza predisposes to pulmonary tuberculosis. This may be true; but is it not possible that this belief is due to the confusion of tuberculosis with the postinfluenzal nontuberculous, pulmonary conditions described in this paper? We all see cases of pulmonary disease in which the tubercle bacillus cannot be found in the sputum, and cases in which physical changes characteristic of pulmonary tuberculosis cannot be found in the lungs, which are, nevertheless, diagnosed as possible, or even probable, pulmonary tuberculosis. But in the case of a patient giving a history of severe influenza and pneumonia, preceded by good health and followed by chronic pulmonary disease, a diagnosis of pulmonary tuberculosis should not be made unless either physical or roentgen-ray findings show the definite characteristics of pulmonary tuberculosis, or the sputum shows tubercle bacilli. It is possible that pulmonary tuberculosis may attack a person suffering from this postinfluenzal pneumonic condition, so that the two conditions may be present in the same patient, or that pulmonary tuberculosis may immediately follow a severe case of influenza; but I have never seen this combination of conditions.

REPORT OF CASES

CASE 1.—*History.*—A man, aged 21, whose condition had been diagnosed in other hospitals as pulmonary tuberculosis, and who recently left a hospital with this diagnosis, was referred to us for treatment of the same condition. He had never had rheumatism, sore throat, scarlet fever or any venereal disease. He was always well until October, 1918, when he suffered a severe attack of influenza, which kept him in the hospital until the end of the year. When he left the hospital, he was tired and weak; his cough persisted, and he was raising considerable sputum, and sometimes blood. He grew steadily worse until February, 1919. He again entered the hospital, where a diagnosis of "abscess of the lung" and "pneumonia" was made. After four weeks, he was discharged; but, according to his statement, he had never been well since. He had tried to work from time to time, but always gave out. He had a persistent cough, and raised moderate amounts of thick, yellowish sputum and, on rare occasions, some blood. He was short of breath on slight exertion. His weight fluctuated; it was now a little below normal. His appetite had been fair, and he never had night sweats. Pain in the chest and palpitation were absent.

Physical Examination.—The patient was fairly well developed and nourished. His color was good; his skin, clear. The pupils reacted to light; the knee jerks were active; the extended fingers did not tremble. There was no clubbing of the fingers, no exophthalmos and no thyroid enlargement. The tonsils were small and not septic, and there was no cervical adenitis. The breath had a disagreeable odor. There was a slight deviation of the nasal septum, but the breathing space was sufficient. The teeth were in good condition.

The pulse was 68, regular and of good quality. Just outside and below the left nipple was an area over the chest wall rather more than half the size of one's hand that looked depressed. No point of maximal impulse of the apex could be felt or seen. On percussion, the left border of the heart was found 7.5 cm. to the left of the midsternal line, 2 cm. inside the nipple line. A blowing systolic murmur that did not mask the first sound could be heard, with maximal intensity over the base. After exercise, this systolic murmur became accentuated, but no diastolic murmur was evoked.

The lungs and the diaphragm showed good expansion. Resonance over both lungs was good. Respiration was harsh over both bases. There was no bronchial breathing. In both axillae, respiration had an emphysematous quality at both bases behind. Persistent fine and coarse râles could be heard after cough.

The temperature was never higher than 99 F. The Wassermann reaction was negative. The urine was normal. Thirteen sputum examinations had been negative for the tubercle bacillus. No influenza bacilli had been found in the sputum. A diplococcus resembling pneumococcus was found, which was pathogenic for mice. The blood pressure was 100 systolic and 64 diastolic.

1. I have seen three cases in the last two days; six cases in the last week.

Roentgen-Ray Examination.—The roentgenologist reported findings consistent with tuberculosis of the lower lobes or with pulmonary syphilis.

CASE 2.—*History.*—A man, aged 30, whose condition had been diagnosed as active pulmonary tuberculosis, myocarditis and asthma, was referred for examination about three weeks after leaving a tuberculosis hospital against medical advice. He had always been well, until August, 1918, when he had a severe attack of influenza followed by pneumonia, which kept him in the hospital two months. Since that time, he had never been well, and had done little work, spending most of his time in hospitals. He had had a cough, and had not been strong. He became short of breath after very slight exertion. He had dizzy spells, but he did not faint. At times, he had pain in both sides of the chest, in front and behind. He raised much sputum, which, he said, was sometimes blood-tinged. He had attacks of palpitation. He did not have asthmatic attacks.

Physical Examination.—The patient was small, but fairly well nourished. He had good color and looked healthy. The pupils reacted to light. The knee jerks were lively. He showed no exophthalmos and no thyroid enlargement. The tonsils had been removed. There was no cervical adenitis. The nasal septum was straight, and breathing space sufficient. The extended fingers did not tremble.

The pulse was 78, regular and of good quality. The apex impulse could be felt, but not seen, in the fifth space, 7 cm. to the left of the midsternal line, 1.5 cm. inside the nipple line, and inside the midclavicular line; dulness corresponded. There was no increase in dulness upward or to the right. No thrill could be felt. The heart sounds were of good quality. The pulmonic second sound was slightly accentuated. No cardiac murmurs were heard.

The lung expansion was good, and equal on the two sides. The percussion note was resonant over both lungs throughout, front and back on the two sides; in fact, there was slight hyperresonance. But the degree of resonance showed slight change from time to time. The breath sounds were very rough, harsh, and noisy throughout both sides. There was no marked change in fremitus. Throughout both lungs, during both inspiration and expiration, noisy squeaks could be heard. But there were no persistent moist râles after cough.

No marked changes were noted in the roentgen-ray examination of the lungs.

Many specimens of sputum had been examined, but tubercle bacilli had never been found.

Fever was not present. The Wassermann reaction was negative. The urine was normal.

CASE 3.—A man, aged 28, sent from another hospital to our hospital with a diagnosis of pulmonary tuberculosis, had been treated by his own physician for heart disease and bronchitis over a period of three years.

He had no "rheumatic" or syphilitic history. He was always well until he had influenza in 1918. Since then, he had been under medical care. He has not been able to hold a job because he could not work steadily.

He had been weak and tired, and had a cough. He raised a moderate amount of sputum, and sometimes, he said, a little blood. He complained at times of severe pains in the chest. He slept poorly. He became short of breath after climbing one flight of stairs. The heart pumped violently on slight exertion. From time to time, he had dizzy spells, but did not faint. He said that he was very nervous and easily excited. His weight had been about constant. He did not have night sweats. His appetite had been good.

Physical Examination.—The patient was slender and pale, with pale mucous membranes. The cheeks were sunken, and he looked tired. The pupils reacted to light. The knee jerks were very lively. There was no exophthalmos and no thyroid enlargement. The tonsils were not large or septic, and there was no cervical adenitis. The nose showed ample breathing space. The extended fingers did not tremble.

The pulse was 78, of good quality and regular. No point of maximal apical impulse could be felt or seen. The left border of the heart was in the fifth space, 8.5 cm. to the left of the midsternal line, 1.5 cm. inside the nipple line. There was no enlargement upward or to the right. The great vessels were not enlarged. The heart sounds were not very forcible. With certain phases of respiration, a short systolic murmur could be heard. There was no diastolic murmur. The aortic and pulmonic sounds were of about equal intensity. The second sound was not reduplicated. Systolic pressure was 120; diastolic, 85.

The motility of the lungs was good, and equal on the two sides. The percussion note was slightly dull at both apexes behind, and at both bases, especially the left, behind. There was no marked change in fremitus. The breath sounds were harsh over both apexes, and were distant at both bases, especially the left, behind. Inconstant, coarse, sibilant râles could be heard over both upper lobes. But there were no persistent moist râles after cough. The findings showed change from time to time.

Many examinations had been made of the sputum; tubercle bacilli were never found. Roentgen-ray examination showed no marked change in the lungs. The Wassermann reaction was negative. The urine was negative. In the last few months, the temperature had rarely been a shade above 99 F.

CASE 4.—A man, aged 24, sent to the hospital with a diagnosis of heart disease and bronchial asthma, who gave no "rheumatic" or venereal history, had never been ill until four years previously, when he had a severe attack of influenza. He had never been well since. After the attack, a cough remained, and the patient raised a moderate amount of sputum. One day, during a violent coughing spell, he raised blood or blood-tinged sputum. He was very short of breath. Almost every night, he had attacks of wheezing, and became "choked up," so it became necessary to sit up in bed. From time to time, he had sharp pains through both sides of the chest. His weight remained about constant. He had never had any rise of temperature while in the hospital.

Physical Examination.—The patient was well developed and well nourished, with good color. The knee jerks were lively. The extended fingers did not tremble. The pupils reacted to light. There was no exophthalmos, and no thyroid enlargement. The tonsils were not large or septic; the teeth were in good condition; there was no cervical adenitis. (He had a deviated septum, which was corrected by operation about a year previously.) His breathing space was sufficient. There was no clubbing of the fingers. There was no pulsation in the neck.

The pulse was 92, regular and of good quality.

The maximal impulse of the apex was felt, but not seen, in the fifth space, 7 cm. to the left of the midsternal line, 2.5 cm. inside the nipple line, 2 cm. inside the midclavicular line. Dulness corresponded. There was no extension of dulness upward or to the right. The vessels were not enlarged. A very short systolic murmur was heard at the base. After a little exercise, the third heart sound could be heard, but no diastolic murmur. The heart sounds were of good quality. Sinus respiratory arrhythmia was not marked. The second sounds were about equal in intensity. The second sound was not reduplicated. The systolic blood pressure was 110; diastolic, 60.

Roentgen-ray examination of the heart had shown enlargement of the right auricle.

There was a slight lag of the right chest on respiration. There was slight dulness over the right upper lobe in front and behind. Vocal and tactile fremitus showed no marked change. At the right base behind, expiration was slightly prolonged, and a few noisy râles were heard, which soon cleared up. There were no persistent medium moist râles after cough. At times, when the wheezing was bad, the lungs were full of sonorous and sibilant râles.

Skin protein tests were all negative.

The sputum had been examined many times, but tubercle bacilli were never found.

The Wassermann reaction was negative. The urine was normal.

The temperature remained normal.

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ALIMENTARY LEUKOCYTOSIS IN EIGHTY NORMAL MEN

A STUDY IN REFERENCE TO THE CRISE HÉMOCLASIQUE OF WIDAL *

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The statement by Widal, Abrami and Iancovesco,[1] in 1920, that leukopenia following a standard protein meal is to be regarded as a delicate test for the presence of hepatic insufficiency suggested the advisability of studying a series of postalimentary leukocyte curves in normal persons. As the original article by Widal and his co-workers reported only eleven control experiments, it seemed wise to try the test further on a larger group of healthy men.

Widal's test appears to rest on a sound experimental basis. It is known that the injection of a certain quantity of commercial peptone into the general circulation of a dog will promptly result in a crise hémoclasique. This syndrome is an evidence of upset of the colloidal balance of the blood, and is characterized clinically by leukopenia, a fall of blood pressure, hypercoagulability, and a change in the refractive index of the serum.

If after a heavy protein meal, samples of blood are taken either from the portal vein or from the general circulation, they will yield on chemical examination no trace of either proteose or peptone. However, by a biologic reaction, Widal was enabled to demonstrate the presence of these substances in the blood of the portal vein. For this purpose, he momentarily established an anastomosis between the portal vein and the inferior vena cava of a dog during the digestive period by a process similar to that utilized in making an Eck's fistula. Several minutes after the connection had been made, a typical crise hémoclasique resulted. This experiment was controlled by performing the same test on unfed dogs. In the latter animals, no crisis was observed. These studies show that the products of digestion which are normally absorbed into the portal vein, can, when they gain entrance into the general circulation, cause a disturbance of the colloidal balance of the blood analogous to that resulting from the direct injection of commercial peptone.

By withdrawing 40 c.c. of blood from the portal vein of a dog during the height of the digestive period and immediately introducing it into the saphenous vein of the same animal, Widal was able to induce an artificial crisis. Confirmation was added to this experiment by the work of Roch and Gautier [2] in 1922. As ascitic fluid is a portal transudate, these workers reasoned that the entrance of this fluid into the general circulation should produce a crise hémoclasique. This proved to be the case, the white count, in one experiment on a woman with Laënnec's cirrhosis, falling, forty-five minutes after the subcutaneous injection of the fluid, from 10,540 to 6,200 cells. The blood pressure likewise was lowered.

On the basis of his investigations, Widal formulated the hypothesis that the peptones, proteoses, and other disintegrating protein substances found in the portal vein during the digestive period, are arrested and transformed by the liver. This action he designated as the proteopexic function of the liver.

To be consistent with the foregoing data, it seemed probable that the proteopexic function would be deficient in various hepatopathies, that this defect would be associated with a crise hémoclasique following alimentation in persons thus affected, and, finally, that our knowledge of this subject could be utilized clinically in devising a method for detecting insufficiency of the liver. Further research proved that these surmises were true.

The technic of the test proposed by Widal is very simple. The subject to be examined abstains completely from food for a period of at least five hours preceding the test. This detail is of great importance, as the ingestion of nitrogenous food, no matter how small the amount, interferes greatly with the reaction. A leukocyte count is made, and then the subject drinks 200 gm. of milk (a glass of milk, the exact amount not being essential). Subsequently, the leukocytes are counted at intervals of twenty minutes for a period of two hours. Normally, there is slight leukocytosis following the ingestion of the milk, and the count never falls below the prealimentary level. The occurrence of postalimentary leukopenia is considered pathologic and an evidence of hepatic insufficiency. This leukopenia, when present, usually appears in the first hour. In one of Widal's patients it was as late as an hour and a half in coming on. The other signs of the crise hémoclasique, viz., the fall of blood pressure, the increased coagulability of the blood, and the diminished refractive index of the serum, accompany the leukopenia. The last manifestation, however, is the most sensitive and the easiest to determine; it was therefore recommended by Widal that chief reliance be placed on this evidence in determining the existence of a crise.

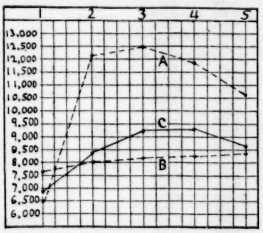

Chart 1.—Postalimentary leukocyte curves in eighty normal persons: 1, after five hours' fast and before test meal; 2, one-half hour after milk, 3, one hour after milk; 4, one and one-half hours after milk; 5, two hours after milk; *A*, maximal degree of leukocytosis; *B*, minimal degree; *C*, composite curve of leukocytosis in eighty normal persons. In every instance, some degree of leukocytosis was observed. The interrupted lines *A* and *B* represent the limits of variation; i. e., they are the curves of the cases in which the maximal and the minimal degrees of leukocytosis, respectively, occurred. The solid line *C* represents the composite curve of normal postalimentary leukocytosis, the average of the curves obtained.

That leukocytosis following the ingestion of a meal rich in proteins is the rule has long been known. But, if this physiologic phenomenon is to be employed as a foundation on which to build a clinical test, it is very essential to establish the fact that the response is uniform for normal persons. More specifically, it becomes obligatory to investigate thoroughly the physiologic reaction resulting when the protein dosage is reduced to the small quota contained in a single glass of milk.

Widal studied eleven normal persons and sixteen patients in whom the liver was intact, and found that, in all instances, the ingestion of a glass of milk, or, in fact, even of larger quantities of protein, left the subject free from a crise hémoclasique.

* From the Clinical Laboratory, Department of Internal Medicine, Long Island College Hospital.

1. Widal, F.; Abrami, P., and Iancovesco, N.: L'épreuve de l'hémoclasie digestive dans l'étude de l'insuffisance hépatique, Presse méd. **28**: 893 (Dec. 11) 1920.

2. Roch, M., and Gautier, P.: Choc hémoclasique chez les pleurétiques et les ascitiques par auto-injection du liquide de l'épanchement, Presse méd. **30**: 209 (March 11) 1922.

It seemed to me that a test of this delicacy should be substantiated by a larger number of observations on normal persons. Leukocyte counts are subject to such great variations, depending on numerous factors, that it appeared beforehand as if alimentary leukopenia must surely occur in a certain definite percentage of healthy men. To record the leukocyte curves noted in

TABLE 1.—LEUKOCYTE CURVES IN EIGHTY MEDICAL STUDENTS AT INTERVALS OF ONE-HALF HOUR FOLLOWING INGESTION OF 200 GM. OF MILK

Subject	After 5 Hours' Fast	After Ingestion of 200 Gm. of Milk				
		½ Hr.	1 Hr.	1½ Hr.	2 Hr.	2½ Hr.
1	6,500	8,400	9,200	8,700	.....	.....
2	7,200	7,600	9,200	7,800	.....	.....
3	7,400	9,040	9,280	10,480	8,640	8,480
4	7,400	8,700	9,500	10,050	9,300	.....
5	7,200	9,400	10,300	8,300	.....	.....
6	7,300	8,200	8,900	9,200	8,400	.....
7	7,600	8,400	8,800	10,400	.....	.....
8	7,500	11,500	10,200	10,200	8,000	.....
9	7,300	8,200	9,100	8,200	.....	.....
10	7,300	7,900	8,200	7,900	.....	.....
11	7,100	7,900	8,400	8,900	.....	.....
12	7,200	8,600	8,900	9,000	.....	.....
13	7,100	8,500	8,700	9,400	.....	.....
14	7,400	9,200	9,450	8,750	.....	.....
15	7,200	9,400	9,600	8,400	.....	.....
16	8,300	10,300	10,000	10,200	.....	.....
17	7,100	9,800	10,500	8,000	.....	.....
18	6,300	9,600	10,200	7,500	.....	.....
19	7,500	8,300	8,900	9,400	8 700	8,200
20	7,500	8,800	10,240	10,400	8,800	.....
21	6,900	9,300	12,200	10,500	.....	.....
22	7,600	8,400	8,000	7,500	.....	.....
23	7,300	8,100	8,500	8,300	.....	.....
24	8,000	9,100	9,500	9,200	8,500	.....
25	7,400	9,300	9,800	10,200	9,000	.....
26	7,800	8,600	9,500	10,400	9,000	.....
27	7,400	8,000	9,200	10,800	9,000	.....
28	7,200	9,750	10,300	11,400	10,500	7,900
29	7,200	7,600	8,000	10,800	9,200	.....
30	7,100	8,500	9,200	8,000	.....	.....
31	8,400	9,200	12,000	10,000	.....	.....
32	6,700	7,200	8,340	9,400	8,600	.....
33	9,500	10,000	10,500	11,400	.....	.....
34	9,400	12,800	13,100	14,000	.....	.....
35	8,000	8,800	11,800	14,400	.....	.....
36	6,900	12,500	10,000	9,500	.....	.....
37	6,400	10,200	11,200	9,000	8,200	7,500
38	6,300	9,640	10,500	10,600	8,600	7,300
39	12,000	14,200	15,600	13,800	.....	.....
40	7,000	12,500	13,000	12,400	11,200	.....
41	7,400	9,900	13,000	7,700	.....	.....
42	7,500	9,680	10,400	10,600	.....	.....
43	8,000	9,600	10,000	11,200	12,800	.....
44	7,800	8,200	9,300	10,400	9,500	.....
45	7,500	8,300	9,000	10,600	11,180	9,800
46	7,020	8,600	10,050	9,200	8,780	.....
47	7,300	8,260	9,280	9,000	.....	.....
48	6,400	8,880	10,000	10,900	10,000	.....
49	7,200	9,900	11,400	12,600	10,300	.....
50	6,800	8,200	10,860	11,600	10,900	.....
51	7,800	8,300	9,600	10,200	9,000	.....
52	7,200	9,500	12,400	12,500	.....	.....
53	8,200	8,800	8,860	8,840	.....	.....
54	6,800	7,400	8,800	9,000	.....	.....
55	9,000	9,800	10,200	11,400	10,000	.....
56	7,200	8,200	8,800	9,200	9,000	.....
57	6,400	7,200	8,800	9,200	.....	.....
58	7,600	8,200	9,000	9,200	.....	.....
59	6,200	7,000	8,000	8,000	.....	.....
60	6,200	7,200	11,800	10,400	.....	.....
61	7,100	7,600	8,000	8,100	.....	.....
62	7,200	8,400	9,200	9,000	8,000	.....
63	8,400	8,900	9,100	9,200	9,250	.....
64	7,300	8,200	9,300	8,500	.....	.....
65	6,500	7,400	8,600	9,200	11,200	10,400
66	5,760	9,200	10,520	9,000	.....	.....
67	6,300	7,600	8,200	10,000	.....	.....
68	6,000	8,000	9,500	11,500	.....	.....
69	6,800	10,200	9,500	8,000	.....	.....
70	7,200	7,800	9,000	8,100	7,500	.....
71	8,200	9,000	9,600	10,400	10,000	.....
72	7,200	8,200	9,400	9,200	.....	.....
73	6,800	7,200	8,400	7,500	.....	.....
74	8,200	8,500	8,650	8,750	8,800	8,900
75	7,600	8,500	9,500	10,800	9,100	.....
76	7,800	8,400	9,200	8,200	.....	.....
77	7,400	8,000	9,200	10,800	9,000	8,000
78	7,800	8,000	9,500	8,400	.....	.....
79	7,900	8,400	9,200	10,400	9,500	.....
80	7,820	8,450	9,200	10,800	8,200	.....

normal persons following the ingestion of one glass of milk after five hours of fasting, and, if the curves proved to be consistent, to plot out a composite curve of normal alimentary leukocytosis, under the foregoing conditions, furnished the subject for the present investigation.

POSTALIMENTARY LEUKOCYTE CURVES IN EIGHTY NORMAL PERSONS

The present series of experiments was conducted on eighty presumably healthy medical students. In each instance, the subject had his breakfast between 7 and 8 a. m., and thereafter fasted until 1 p. m. At this time a total white count was made, and then the subject drank one glass of milk. Thereafter, white counts were made at intervals of one-half hour. The complete result of these counts is given in Table 1.

The outstanding feature of Table 1 is the high degree of uniformity in the leukocyte curves. Of the eighty normal persons tested, not one failed to show a response in leukocytosis; in other words, the crise hémoclasique, as judged by the leukocyte count, did not occur once. The curves themselves were surprisingly similar in character.

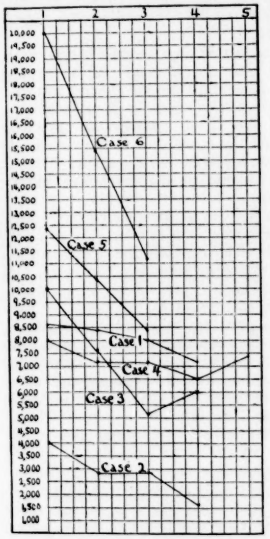

Chart 2.—Postalimentary leukocyte curves in six patients, showing the crise hémoclasique: The time intervals are the same as in Chart 1. Case 1, bronchial asthma; Case 2, Laënnec's cirrhosis; Case 3, cholelithiasis; Case 4, syphilis of liver, with ascites; Case 5, idiosyncrasy to milk; Case 6, Laënnec's cirrhosis, bronchitis.

Three curves are graphically represented in Chart 1. They are the two extremes, i. e., the minimal and the maximal degrees of leukocytosis observed in normal persons, and a composite curve, obtained by averaging the figures obtained in the entire series. It is believed that these curves can safely be considered to portray the average type of reaction and the permissible limits of variation in normal persons.

The present study adds considerable justification to Widal's contention that postalimentary leukopenia is to be construed as a pathologic phenomenon. It does not touch on the problem of the specific interpretation of abnormal curves, or upon the possible occurrence of postalimentary leukopenia in pathologic states other than hepatic insufficiency.

While the present work was not primarily intended to include a study of pathologic material, it may not be

TABLE 2.—SIX CLINICAL CASES IN WHICH THE CRISE HÉMOCLASIQUE OCCURRED

Case	Clinical Diagnosis	Before Test Meal	After 200 Gm. of Milk			
			½ Hr.	1 Hr.	1½ Hr.	2 Hr.
1	Bronchial asthma	8,600	8,400	8,000	7,200	.....
2	Laënnec's cirrhosis	4,000	2,800	2,800	1,600	.....
3	Cholelithiasis	10,000	7,600	5,300	6,000	.....
4	Syphilis of liver; ascites	8,000	7,200	7,200	6,500	7,400
5	Idiosyncrasy to milk; sick with nausea, apparently due to test meal	12,400	10,400	8,450	.....	.....
6	Laënnec's cirrhosis; bronchitis	20,000	15,400	11,200	.....	.....

amiss to mention several clinical examples in which the test was used and the crise hémoclasique resulted. Table 2 gives these cases, and the curves are graphically shown in Chart 2.

SUMMARY

The present study was undertaken for the purpose of investigating the normal leukocyte curve following the ingestion of one glass of milk after a period of fasting. Alimentary leukocytosis is the physiologic foundation on which Widal's test of liver function is built. While a decrescendo leukocyte curve is not the only element in the crise hémoclasique of Widal, the other components being a fall of blood pressure, increased coagulability of the blood, and a diminished refractive index of the serum, Widal expressed the opinion that a drop in the leukocyte curve is the most important part of the syndrome, and is sufficient basis for the diagnosis of hepatic inadequacy.

It therefore became essential to institute a careful inquiry into the physiologic results before attempting to interpret atypical curves. It was necessary to establish the fact that alimentary leukocytosis is uniform under normal conditions. To give a physiologic background on which to base pathologic studies, it appeared desirable to plot out a composite curve of normal alimentary leukocytosis, under the conditions of the test, together with the curves of the permissible limits of variation in normal persons.

Experiments with reference to their postalimentary leukocyte curves were conducted on eighty presumably healthy medical students. After five hours of fasting, a white cell count was made, then a glass of milk was ingested, and thereafter the leukocytes were counted at intervals of one-half hour. In every instance, some degree of leukocytosis followed the administration of the test meal; in other words, the crise hémoclasique, as judged by the postalimentary leukocyte curve, did not once occur in a normal person. There was considerable uniformity in the curves, and the difference between the two extreme variants (Chart 1) was not great.

The composite curve of normal postalimentary leukocytosis (Chart 1), as obtained by averaging the figures on the eighty normal subjects, gave counts of 7,379 white cells before the meal, and 8,856, 9,762, 9,779 and 9,191 white cells one-half hour, one hour, an hour and a half, and two hours, respectively, after the meal.

From the studies here reported, it appears safe to conclude that the normal response to the conditions of Widal's liver function test is uniformly one of leukocytosis.

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The Greatest Intellectual Revolution.—We are in the midst of the greatest intellectual revolution that has ever overtaken mankind. Our whole conception of mind is undergoing a great change. We are beginning to understand its nature, and as we find out more, intelligence may be raised to a recognized dignity and effectiveness which it has never enjoyed before. An encouraging beginning has been made in the case of the natural sciences, and a similar success may await the studies which have to do with the critical estimate of man's complicated nature, his fundamental impulses and resources, the needless and fatal repressions which these have suffered through the ignorance of the past, and the discovery of untried ways of enriching our existence and improving our relations with our fellow men.—Robinson: The Mind in the Making.

DUODENAL MOTILITY

RADIOGRAPHIC OBSERVATIONS FOLLOWING THE DIRECT INJECTION OF BARIUM INTO THE HUMAN DUODENUM

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SEATTLE

Recent experimenters have shown that duodenal contents normally are regurgitated into the stomach toward the close of gastric digestion. This finding, together with the frequency with which reverse movements of barium are seen during radiographic examinations of the gastro-intestinal tract[1]—partial duodenal obstruction—prompted the present direct study of movements in the human duodenum.

It is not my purpose in this paper to set forth evidence either for or against any particular theory pertaining to the physiology of the duodenum. However, the results obtained by a specific method of duodenal injection will be presented and discussed in the light of modern theories. Whether or not the observations will be of use from a physiologic or clinical standpoint requires corroborative evidence; the amount of information to date is insufficient to warrant general conclusions.

METHOD

A small duodenal tube with a metallic tip is passed into the stomach, the contents of the stomach are withdrawn, and the patient is then permitted to recline on the right side until the bile flows from the tube. The presence of bile is taken as an indication of the presence of the tube in the duodenum. Following drainage of the duodenum, the patient is fluoroscoped, and the position of the tube is determined. Then from 15 to 30 c.c. of a barium mixture is injected through the tube into the duodenum. Injections are often repeated, some patients receiving as high as 180 c.c. during the course of an examination. Tracings of the various positions of the barium are made on thin sheets of paper placed on the fluoroscope screen. These drawings, while less exact than roentgenograms, have the advantage of representing known conditions in the parts studied.

Disadvantages of the method are that: (1) Material is normally delivered to the duodenum only after passage through the stomach; (2) the presence of the tube, a foreign object, may of itself excite atypical motility; (3) the distention of the duodenum at a given point may give rise to motor activities which, though interesting, perhaps, are not normal to that viscus. For these and other reasons, inferences as to normal duodenal motility will not be attempted.

The method possesses the advantage of an unobstructed view of the duodenum throughout its entire length. The removal of gastric contents may or may not be of advantage; nevertheless, it removes the possibility of confusion because of the passage of material from the stomach into the duodenum.

1. The method here described has been of material service in determining obstruction by making possible the direct visualization of the duodenum throughout its entire course, thereby obviating difficulties encountered following the usual radiographic methods. Quain, in an article (Chronic Duodenal Obstruction, New York M. J. **116**: 651 [Dec. 6] 1922), which has appeared since the writing of this paper, complains of the usual radiographic methods in these words: "In the examination it is sometimes difficult to make out the exact location and conformity of the third portion of the duodenum. The stomach is usually ptosed, and after it is filled with the barium mixture, it conceals the duodenum in the anteroposterior aspect. Turning the patient sidewise gives a better opportunity to visualize this part of the duodenum."

In presenting the data and throughout the discussion, such terms as peristalsis and antiperistalsis will not be used for the reason that these terms are accepted as having specific physiologic meanings. Perhaps such terms might justly be applied to the observed phenomena of the study, but simple descriptive words will suffice for the present needs and will thus prevent unnecessary confusion and possibly just criticism.

RESULTS

Results wil be considered under the headings of (1) immediate results of barium injection; (2) reverse passage of barium from the point of injection to the duodenal cap and stomach; (3) forward passage of barium; (4) "to and fro movements" of barium in a limited portion of the duodenum; (5) injection of the jejunum, and (6) duodenal retention.

IMMEDIATE RESULTS OF DUODENAL INJECTION

Slow injection of from 15 to 30 c.c. of a barium mixture into the duodenum gradually increased the size of the shadow at the point of delivery. The shadow,

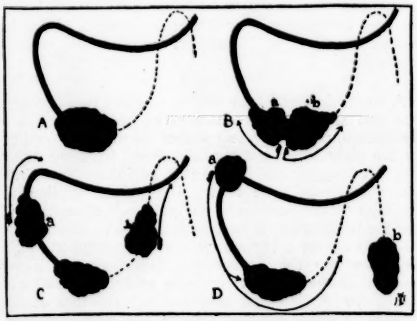

Fig. 1.—Schematic representation of the usual movements of barium following its injection into the human duodenum: *A*, local distention following injection; *B*, barium mass being divided; *C*, barium masses, *a* and *b*, passing from the point of injection, *a* toward the pylorus, *b* toward the jejunum; *D*, mass *a* resting in the cap region; *b* in the jejunum. The arrow from the cap region indicates the passage of barium from that region to the point of injection and to lower segments.

oval at first, gradually assumed an oblong shape as the injection continued. At the point of flattening of the oval mass the injection was discontinued, it being assumed that maximal lateral distention had occurred. Only sufficient barium was injected into the duodenum to cause moderate distention and present a bolus on which the duodenum might act.

In the majority of the cases the placement of barium within the duodenum was followed within a few seconds by constriction of the mass at the point of injection. This constriction resulted in the separation of two portions from the primary mass and their propulsion along both directions of the duodenum; the one portion passing toward the cap, the other toward the jejunum. Usually such movements did not completely empty the injected portion. This type of primary response was observed in seven of the thirteen cases included in this study (Fig. 1). A primary forward passage was observed in four cases. Reverse movements of barium occurred in two cases as the first motor response to duodenal injection. On several occasions, preceding the movements just described, the barium shadow was partially divided and moved in opposite directions over short distances, from 2 to 3 cm., and later reunited at the point of division.

REVERSE MOVEMENTS IN THE DUODENUM

Barium was presented to the pylorus at some time during the examination of all the thirteen cases, and rested there for varying periods of time. In six cases, barium was passed from the point of injection into the stomach; in two of these cases, however, this occurred only after the injection of considerable quantities into the duodenum.

The injection of 15 c.c. of barium in Case 1, in which the tip of the duodenal tube lay within the cap, caused maximal distention. Barium did not pass into the stomach following this injection or at any time during the examination. The cap contained barium thirty minutes after the primary injection in spite of the fact that small amounts had been repeatedly withdrawn and delivered by progressive, forward waves to the jejunum (Fig. 2 *A*). Reverse movements of barium were not observed in any portion of the duodenum.

Maximal distention and motor activity did not occur in Case 2 until approximately 40 c.c. of barium had been injected into the duodenum. The first observed movement almost completely severed the mass and forced the two portions away from each other. The central portion was passed with considerable force toward the pylorus, and came to rest in the cap. At times the reverse movements of barium from the point of injection followed each other in rapid succession, forcing material in tumultuous masses into the cap region. So marked were these movements which piled material against the pylorus that it appeared as though that structure must give way to prevent serious consequences (Fig. 2 *C*). The pylorus, however, did not yield for a considerable time; then a small amount of barium was observed in the stomach. Reverse movements were observed in this case only in that portion of the duodenum cephalad to the tip of the tube.

Injection of the duodenum in Case 3, approximately 19 cm. below the pylorus, was followed by nearly complete division of the mass. The proximal portion was delivered to the cap by one continuous, rapid movement; this portion came to rest in the cap long before the distal portion reached the ileum. From time to time, following the initial movement of barium along both directions of the duodenum, small portions were separated from the mass at the point of injection, and passed to the cap. Usually these reverse movements occurred after a series of deliveries from the cap to the point of injection. On several occasions there occurred rhythmic alternations in the forward and reverse passage of material along the descending portion of the duodenum.

Similar reverse movements of barium were observed in all of the cases save the one in which injection of the cap occurred. In three cases, marked reverse movements occurred in the terminal portion of the duodenum. In several instances, barium was passed toward the cap only after the injection of a considerable amount into the duodenum. Reverse movements in those cases were followed by forward movements, the result being that material passed toward the cap was immediately returned to lower segments.

That reverse movements of barium in the duodenum, as here described, are not entirely the result of the particular method employed is evidenced by the pres-

ence of similar movements in persons examined by the usual roentgenographic methods. For instance, reverse movements were observed throughout the course of the duodenum in Cases 4, 5, 6, 7, 8, 9, 10, 11, 12 and 13, examined after the drinking of a barium mixture (Fig. 3).

FORWARD MOVEMENTS OF BARIUM

Progressive, forward movements of barium, as observed in this study, began either at the point of duodenal injection or from the cap region after its filling by the reverse passage of barium from the point of injection. In brief, the passage of barium caudad from those two points was identical with the passage of barium through the duodenum of persons who had not received the duodenal tube. However, there was this difference: In the usual preparation, movements of barium began in the cap region and progressed along the duodenum, whereas, following direct duodenal injection, the first forward movement began at the point of injection, a point from 4 to 18 cm. distal to the pylorus. Movements of barium were caudad only in Case 1, in which the tip of the duodenal tube rested in the cap. When the point of the tube lay distal to the cap, twelve cases, the first progressive, forward movement apparently began at the point of injection. Later, following reverse filling of the cap, progressive movements from that region delivered barium to the point of injection, at times through the region of injection to more distal positions (Fig. 1). In certain instances—four cases—the first movement of barium following injection of the duodenum was a forward passage into the ileum; in other instances, barium was passed forward various distances and there retained until succeeding movements either carried it forward to the ileum or reverse movements delivered it back to the point of injection or to the cap.

I have not observed movements of barium from the cap which indicate that material simply drops or is siphoned from this region. My observations to date on this point, briefly, are these: Material remains in the cap as a rounded mass for an appreciable period of time following its distention, either directly by injection or indirectly by the passage of material from the stomach or from the duodenum by reverse movements. The first indication of change in the mass is the widening of the distal conical portion. This widening increases as barium rushes through it to fill a portion of the proximal duodenum. At no time does this point of opening reach the diameter of the mass collected below the cap. Following the collection of material in the upper duodenum and apparently before the mass passes forward, its continuity with that in the cap is severed. The portion thus cut off is moved progressively forward.

The present method of study gives no information pertaining to tone changes in the duodenum as affected by gastric motor activity, or evidence as to the origin of waves which pass barium away from the point of duodenal injection and the cap region. The only information establishable is that distention of the duodenum usually is followed by division of the mass and its passage along both directions of the duodenum; also that the filling of the cap by reverse movements of barium from the point of injection is followed by the passage of material forward from that region.

"TO AND FRO MOVEMENTS" IN THE DUODENUM

Movements of barium resembling those described by Cannon [2] as rhythmic segmental contractions were frequently observed following duodenal injection.

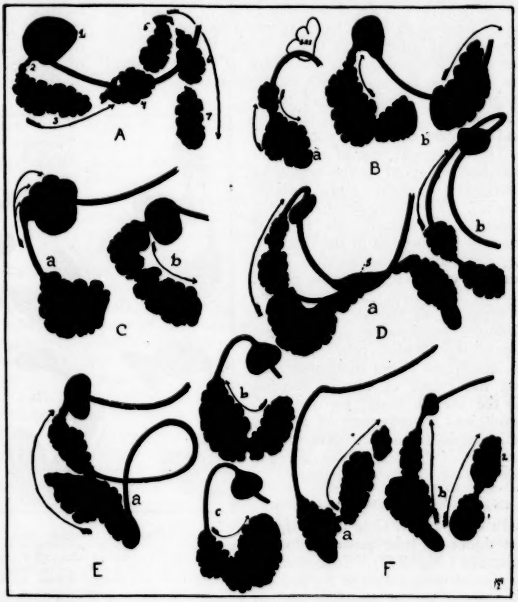

Fig. 2.—Various positions of duodenal tube following its passage into the small bowel, and the various types of activity noted after direct duodenal injection: *A* (Case 1, Oct. 4, 1922): direct injection of duodenal cap; numerals indicate various positions taken by a bolus during its passage from the cap; all observed movements of barium were away from the cap; barium did not enter the stomach. The shape and course of the duodenum should be noted, as compared with the other five figures. *B* (Case 14, Nov. 4, 1922): *a*, pendular movements of barium immediately following duodenal injection; *b*, tracing showing separation of the barium mass and its passage along both directions of the duodenum. During the passage of the distal bolus into the jejunum, the patient complained of dizziness and faintness. *C* (Case 2, Oct. 16, 1922): *a*, the close of a series of reverse movements of barium which completely emptied the ascending duodenum into the cap region; *b*, barium mass being propelled from the cap region following cap distention by reverse movements from the point of injection. *D* (Case 3, Nov. 1, 1922): *a*, injection of the jejunum; the point of injection and the amount of barium along the course of the duodenum to the cap region and in the stomach should be noted; *b*, barium being delivered in small amounts to the cap region from the inferior flexure. The positional changes of the tube and barium in *a* and *b* may be noted. *E* (Case 15, Nov. 13, 1922): *a*, position of coiled tube in the duodenum and the passage of barium to the cap following duodenal injection; a similar coiling of the tube occurred in two other cases; *b*, opposite positions assumed during a period of "to and fro" movements of barium; the tube had been straightened out prior to this observation. *F* (Case 16, Nov. 15, 1922): *a*, primary forward movement of barium following duodenal injection; *b*, complete severance of injected mass and passage of barium along both directions of the duodenum; the shape and position of the cap in this instance should be noted.

Similar movements were observed during regular radiographic examinations. Such movements were characterized by a more or less complete division of a

2. Cannon, W. B.: The Mechanical Factors of Digestion, New York, 1911.

barium mass at several points, this division throwing the barium into segments. Later these oval masses divided, causing the two portions to move in opposite directions to form a second series of oval masses, the central portions of which occupied the positions of previous constriction. Such movements did not carry material forward or backward save over very limited areas.

The injection of 20 c.c. of barium into the duodenum in Case 14 was followed by marked rhythmic "to and fro movements"; the barium was repeatedly divided and redivided. In this case, however, the barium remained confined to the region of injection for possibly three minutes before material was passed along either direction of the duodenum (Fig. 2 *B*). It may be of interest to state that a forward movement from the point of injection in this case was always accompanied by a simultaneous movement of barium toward the cap. On three occasions subsequent to such movements the examination had to be discontinued because of faintness and dizziness of the patient.[3]

The segmental type of movement was best observed in the region of duodenal injection and portions caudad. However, in Case 2 it appeared as though this type of motility was present in the descending limb of the duodenum. Here barium was being rapidly moved toward the pylorus; at the same time it appeared as though the barium, although progressing upward, was repeatedly divided into segments. Evidently the entire movement was not the result of simple division of the barium mass, for the end-result was engorgement of the cap and complete clearance, save for the presence of the tube, of the descending portion of the duodenum.

Fig. 3.—Duodenal retention and reverse movements of barium in two patients following the drinking of a barium mixture: *A* (Case 17, Dec. 1, 1922): *a*, barium being passed from the region of the inferior flexure of the duodenum into the cap region during a quiescent phase of the antrum; *b*, "to and fro" movements of barium in the duodenum during a positive phase of the antrum. The patient invariably complained of a crawling sensation whenever marked "pendular," or reverse movements, occurred in the duodenum. *B* (Case 18, Nov. 17, 1922): duodenal retention and reverse movements of barium as observed after the drinking of a barium mixture. The positions of retention and reverse movements of barium in these two cases are similar to those observed following duodenal injection (Fig. 2).

INJECTION OF THE JEJUNUM

In one patient, Case 3, the tip of the duodenal tube passed into the jejunum (Fig. 2 *D*). Injections at this point were followed by passage of barium to the stomach and to the ileum. The details of the various movements observed need not be given, for they were similar in all respects to those already described.

DUODENAL RETENTION

More or less prolonged retention of barium at the point of duodenal injection occurred in all cases included in this study. Retention of barium in the cap, however, usually outlasted retention in other portions of the duodenum. For instance, in Case 2, distention of the duodenum in the region of the inferior flexure resulted in the rapid accumulation of barium in the cap and the appearance of barium in the ileum. The patient was radiographed as quickly as possible after injection, and it was observed that the cap remained greatly distended while only a small amount of barium remained about the lower end of the duodenal tube. Barium was still in the cap, thirty minutes later.

The movements of barium which nearly emptied the duodenum and which were associated with faintness of the patient in Case 14 were not sufficient to evacuate the cap. In other instances the cap filled promptly and then, by a loss of small portions which were passed caudad, became completely emptied. The absence of barium from the cap was never of long duration while material remained in the duodenum; withdrawals from and presentations to the cap continued until such a time as the forward movements of barium completely emptied the duodenum.

The fact that barium often remains in the cap for some time after complete gastric clearance is evidence that cap retention is not entirely due to the present method of investigation. Retention in the region of the inferior flexure of the duodenum is often observed during routine radiographic examinations. A degree of retention at this point comparable to that observed by the present method, however, would be looked on as indicative of a pathologic condition. Most often retention occurred in the loop formed at the inferior flexure or in that portion beyond the flexure and to the right of the vertebral column.

Whether or not the tendency to retention in the region of the inferior flexure is the result of the method employed, I am unable to say. Up to the present, attempts to inject the last portion of the duodenum have been unsuccessful (Fig. 2 *E*). In the one instance of jejunal injection, barium was rapidly moved along the intestine in both directions; that portion sent cephalad came to rest in the inferior flexure, the cap and the stomach. It would seem from the present study that the mechanics of the duodenum is more responsible for the retention in the inferior flexure than the result of disturbed physiology. The average duodenum has its lowest point at the inferior flexure; the portion reaching the duodenojejunal flexure rises rather acutely. The condition is somewhat analogous to the mechanics of the water-trap stomach; material must be forcibly lifted against gravity from the lowest point. If such an explanation suffices, it is nevertheless difficult to understand the persistent retention in spite of the marked degree of activity of this region. There was no evidence of duodenal obstruction in any of the cases studied. In the one instance of partial obstruction of the ileum—Meckel's diverticulum—there was the usual retention at the inferior flexure, although barium passed evenly through the duodenum and jejunum.

COMMENT

According to the works of Kussmaul[4] and of Rehfuss, Bergeim and Hawk,[5] there is a flow of duodenal

3. I hope to consider specifically, in a subsequent publication, the relation of duodenal motility to psychic states.

4. Kussmaul, A.: Die peristaltische Unruhe des Magens, nebst Bemerkungen über Tiefstand und Erweiterung desselben, das Klatschgeräusch und Galle im Magen, Samml. klin. Vortr. (Volkmann's), 1880, pp. 1637-1674; cited by Alvarez (Footnote 16).

5. Rehfuss, M. E.; Bergeim, Olaf, and Hawk, P. B.: Gastro-Intestinal Studies, I, The Question of the Residuum Found in the Empty Stomach, J. A. M. A. **63**: 11-13 (July 4) 1914.

contents back into the stomach at the close of a meal or during starvation. It appears that this process may be accentuated by the taking of fats[6] which, according to Cannon,[7] impairs the tone and motility of the stomach. Possibly the fatty acids split off by the pancreatic juices stimulate the bowel.[8]

Numerous observations are on record showing that the injection of the duodenum through a duodenal fistula causes a retardation or cessation of gastric evacuation because of the high state of tonicity produced in the pylorus.[9] Cannon [2] noted that distention of the colon with large enemas resulted in the passage of material into the small bowel. Heile,[10] on the other hand, demonstrated that stimulation of the colon slowed the passage of material through the ileocolic sphincter: a condition similar to that observed in the stomach following the injection of material into the duodenum through a fistula. It is of common knowledge that rapid distention of the jejunum—jejunal feeding—often results in nausea, regurgitation and at times vomiting.[11] Also, it is common to find the ileum containing barium after the giving of a barium enema. According to Quimby,[12] such a procedure may result in the passage of material to the duodenum.

Cannon,[13] Engelmann [14] and Kretschmer [15] have shown that stimulation of smooth muscle in a tubular organ results in a contracted tonic ring from which waves are given off in both directions.

According to Alvarez,[16] the rhythmicity, irritability, reaction time and latent period of the gastro-intestinal tract are graded from the stomach—lesser curvature—to the anus: the gradient theory. Raising the gradient in any portion of the intestine, according to this theory, results in the passage of waves in both directions from that point. As stated by this author,[17] in referring to the closure of the pylorus and retardation of gastric evacuation following injection of the duodenum through a fistula: "It is not surprising that food put into the middle of the tract tends to go both ways." To explain the normal regurgitation of duodenal contents into the stomach at the close of gastric digestion, the theory assumes that "the tone of the stomach drops below that of the digesting bowel."

The results of the present study appear to offer considerable support to the gradient theory. As previously considered, duodenal injection, the stomach having previously been emptied, results in a constriction over the mass injected and the passage of material from that point along both directions of the duodenum. Apparently, therefore, distention of the duodenum in some way raises the tone (gradient) sufficiently high to excite motor activity, i. e., contracted tonic ring, from which waves are given off in both directions. In my series of cases, the reverse movements completely filled the cap; at times, material was passed into the stomach. The tenacity with which barium remained in the cap was one of the most remarkable single observations of the present study.

On the basis of the gradient theory it must be assumed that the pyloric sphincter in my cases, immediately following duodenal injection, possessed a tone higher than the duodenum which forced barium against it. Perhaps, as suggested by Alvarez, the wave delivering barium to the cap region was preceded by a conduction wave which, because of the low threshold of irritability of the pylorus, excited it maximally prior to the arrival of the delivering wave. The festoon-like arrangement of the relatively few contractile fibers of the cap region may in part account for the degree of distention of this region and the inability of the active duodenal fibers to pass barium into the stomach. Perhaps, had the duodenum of my patients been more highly distended at the time of the primary injection, material might have been passed directly into the stomach in each case. However, it was deemed advisable to prevent overloading of the duodenum and the possibility of nausea and vomiting. The high initial tonicity of the pylorus evident in the majority of the patients ultimately gave way as material was delivered to the jejunum and ileum for, as previously mentioned, barium was observed in the stomach from twenty to forty minutes after the initial injection. This phenomenon, namely, barium in the stomach following duodenal injection, may be in the main the result of similar activities which carry duodenal contents into the stomach at the close of a normal gastric digestive phase. In other words, it might be assumed that the tone of the stomach had dropped below that of the more or less loaded small bowel.

The result of the present study shows that barium may be passed over a given segment of intestine in opposite directions. Distention of the cap by reverse movements in no instance prevented material from being passed from this region by progressive movements to the point from which it originally came, or to lower segments. Hence, it appears that the gradients can be altered rather rapidly in the duodenum. Perhaps distention of the cap beyond a certain point is sufficient to produce a gradient in the upper duodenum of greater magnitude than that at the point of primary injection; at any rate, barium continues to pass back and forth over the descending portion of the duodenum until finally the "down hill gradient" clears the viscus of contents.

Distention—placing a mass directly within the duodenum—is followed by a "tonic contraction" over the point of distention, and the passage of material along both directions of the viscus. However, in the present series of observations this point of primary distention and motor response tends to remain more or less filled; at least, it is the last portion of the duodenum, save the cap, to become free of barium. If distention increases the gradient at this point, it appears that the same region should be the first to become rid of its contents. This, as previously stated, does not occur. Possibly barium tends to remain at the point of injection, inferior flexure, because of the mechanics of this portion; it is the lowest portion of the duodenum. That mechanical factors may be at least partially responsible for retention at this point is evidenced by the fact that material delivered to the duodenum from the stom-

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13. Cannon, W. B.: Further Observations on the Myenteric Reflex, Am. J. Physiol. **23:** 26-27, 1908.
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16. Alvarez, W. C.: The Mechanics of the Digestive Tract, New York, Paul B. Hoeber, 1922.
17. Alvarez: The Mechanics of the Digestive Tract, p. 101.

ach often lags at the inferior flexure or leaves a portion of its mass after the forward wave has delivered material to the jejunum. It appears that the gradient does not become greatly reduced at the point of retention for the reason that it is from here that barium is passed toward the cap and jejunum. Hence, it may be tentatively assumed that a portion of the duodenum may show high degrees of activity and at the same time retain material for a considerable period of time—a condition somewhat similar to gastric retention and discharge. The present observations, however, lend no positive proof that the gradient is either raised or lowered at the point of retention. The observations simply show that material may continue to be passed from a region of distention along both directions of the duodenum without immediate clearance of the segment distended.

SUMMARY AND CONCLUSIONS

1. Barium in quantities of from 20 to 60 c.c. may be injected directly into the duodenum without causing distress, the stomach and duodenum having previously been emptied of their contents.

2. The first observed movement of the barium following injection into the duodenum is a more or less complete division of the mass at the point of greatest distention.

3. Following the primary partial division, barium is usually passed along both directions of the duodenum, the central portion being delivered to the upper duodenum or cap, the distal portion to the jejunum.

4. Reverse movements of barium sooner or later result in the complete filling of the cap, at which point barium may rest for a long period of time.

5. Following distention of the cap by reverse movements, barium is passed forward by progressive movements which, at times, carry material through the point of original duodenal distention to lower segments.

6. Barium may be delivered from the point of distention to the stomach as the result of reverse movements. In the majority of instances, barium is passed into the stomach only after several injections of the duodenum.

7. Rhythmic segmental and pendular movements of barium occur in the duodenum.

8. Barium tends to rest at the point of injection—inferior flexure. This region is the usual point of injection. In one instance of jejunum injection, marked reverse movements resulted in the lodgment of barium in the cap, stomach and inferior flexure.

Child Labor on Truck Farms.—The migration of hundreds of families from Philadelphia and other Eastern cities for work on truck farms has a serious effect on the schooling of the children in these families, according to a survey made by the U. S. Department of Labor through the Children's Bureau. The findings of the survey show that 71 per cent. of a large group of Philadelphia children who belonged to migratory families were retarded. Twenty-two per cent. were from three to six years below normal grades. The attendance department of the Philadelphia schools estimates that over 2,500 children leave that city before the close of school each spring because of farm work undertaken by themselves or their parents. The migrations, which begin as early as February, reach their height at the strawberry season, and the majority of children do not return to school till the last of October. Many, working in the cranberry bogs, remain until later. The long absences in the autumn not only affect the child's progress in his studies, according to the report, but are probably conducive to truancy and to absence for other unlawful reasons.

Clinical Notes, Suggestions, and New Instruments

DIVERTICULUM OF BLADDER IN THE INGUINAL CANAL

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Diverticula may take their origin from any part of the urinary bladder, although by far the majority spring from the lateral walls, not far from the ureters. Their pathogenesis is still unknown. That some are congenital is evidenced by an analogous condition in fetal bladders, as shown by Watson.[1] However, it is generally believed that they are acquired secondary to some congenital defect in the bladder wall.

The possibility of encountering bladder tissue in the performance of inguinal hernia has been frequently stressed. In a fairly exhaustive review of the literature, I have failed to find a case report of a bladder diverticulum in the inguinal canal.

REPORT OF CASE

Mrs. S., aged 30, a sextipara, whose father was alive, and whose mother died of cancer at 37, had been suffering from so-called bilious attacks every six to eight weeks since childhood. The general habits were good; she urinated about seven times daily and twice at night. The menstrual history was normal.

For the last year the patient had noticed a mass in the right groin which she could reduce by manipulation and lying down. Three days previous to admission to the hospital, she was suddenly seized with severe pain in that region and was unable to reduce the swelling. Her physician, Dr. Maurice Exiner, made a diagnosis of irreducible hernia, and admitted her to the Community Hospital, where I was consulted. She did not appear very acutely ill, although suffering from considerable pain. The temperature on admission was 100.6, pulse 96, respiration 18. The general physical examination was negative. In the right inguinal region a spherical swelling was present, tender, firm, irreducible and not tympanitic. Urinary examination was negative. The diagnosis of an irreducible hernia seemed logical.

Under general anesthesia, the usual Bassini incision was done. Instead of a sac, a tumefaction presented itself, consisting of a firm, vascular, thick walled, pear shaped mass about 5 by 2 cm., lying in the inguinal canal, the narrowest portion at the internal ring. There was no peritoneal sac. The similarity to bladder tissue was noted, a catheter passed by the urethra and the bladder emptied. But the tumor in the inguinal canal remained unchanged in size. The mass was then incised and found to contain about half an ounce of straw-colored fluid. No internal communication with the bladder could be determined. The pedicle at the internal ring was transfixed and ligated with No. 2 chromic gut, and a typical Bassini closure done. The patient had a very smooth convalescence.

We were dealing, then, with either a congenital cyst of the inguinal canal, a bladder hernia, or a diverticulum of the bladder. Microscopic examination, confirmed by several pathologists, proved the specimen to be bladder tissue. The muscle bands were arranged in the characteristic fashion, interspersed by connective tissue. There was, however, a complete absence of epithelium. Hinman,[2] in a series of seventeen operative cases, states that in only one did he discover any vestige of lining epithelium. He mentions the remote possibility of traumatism during operation, such as packing the cavity of the diverticulum, as being the factor in denuding the epithelium. This does not apply to the case here reported, as there was no intradiverticular manipulation. We feel that we were dealing with an old, if not congenital, diverticulum, whose lumen had become shut off from that of the bladder and whose epithelium had undergone atrophy.

41 West Seventy-Fifth Street.

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THE CELLULOID CAPSULE: A MEANS OF DETERMINING THE MOTILITY OF THE GASTRO-INTESTINAL TRACT

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The methods ordinarily adopted for the determination of the motility of the gastro-intestinal tract are:

1. The ingested barium meal. By following roentgenologically the progress of this radiopaque mixture, it is possible to determine, at any time, the exact position of the head and of the tail of the column of barium. Unquestionably, this is the most accurate method we can employ for this purpose at the present time.

2. The use of powdered charcoal or carmin. This material is not radiopaque, and its progress cannot be followed fluoroscopically. At best, only the terminal result can be noted, namely, the time of the appearance of the carmin or charcoal in the stool. No information as to the intermediate progress is obtainable. The method, however, in addition to giving us information as to the total gastro-intestinal motility, serves as a means of demarcation. When it is desired to study the nature of the stool under special conditions or after a particular test diet, the demarcation made possible by ingested carmin or charcoal serves a valuable purpose. It enables us to determine when to begin the study of the properly selected specimen of stool. This could not be done as well with the ordinary ingested barium meal.

The method here reported, though exceedingly simple, is nevertheless clinically valuable, not only for the demarcation of separate specimens of stool, but also for the determination of gastro-intestinal motility. The method consists in the employment of the indigestible celluloid capsule, which I have previously described.[1] This capsule is filled with powdered barium. Because of this, its localization is possible fluoroscopically at any time in the course of its progress through the gastro-intestinal tract. Moreover, the celluloid capsule itself may be prepared so that it is bright red. Because of its color, the capsule can be readily detected in the stool. This informs us as to the total gastro-intestinal motility, and also serves as a means of indicating when to begin the stool examination of a properly selected specimen, after the administration of a test diet such as that of Adolph Schmidt, or of an ordinary meat-free diet for the detection of blood.

1 West Eighty-Fifth Street.

AN IMPROVED METHOD FOR COUNTING BLOOD PLATELETS *

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The essentials of a good method for platelet counting are: (1) an efficient anticoagulant; (2) absence of contact between the undiluted blood and any instrument; (3) preservation and fixation of red blood corpuscles; (4) low specific gravity of diluting solution, and (5) a dye that will readily stain the platelets. To these five might be added a sixth, in case the method is for clinical use; namely, that the solution must be reasonably easy to prepare, and must be stable. The solutions recommended by Pratt,[1] Wright and Kinnicutt,[2] Buckman and Hallisey,[3] Bizzozero[4] (osmic acid anticoagulant, found unsatisfactory by Kemp, Calhoun and Harris[5]) were all found to present features that made satisfactory counts doubtful.

After experimenting with the anticoagulants of the foregoing methods, we reached the conclusion that sodium citrate is by far the most efficient in preventing clumping of the platelets.

The use of the blood pipet for a direct and true count is far easier than any of the indirect methods. It has heretofore been open to the criticism that the platelets have the opportunity of adhering to the glass during the short period before the diluting fluid is drawn in. We have obviated this by first filling the red cell counting pipet to the 0.5 mark with the diluting fluid, and then drawing up the blood rapidly until the top of the column reaches the 1.0 mark, whereupon the pipet is again plunged into the diluting fluid and the dilution is completed. With a little practice, this can be done very accurately. In obtaining blood, the puncture should be made sufficiently deep to cause the blood to flow freely for a few seconds. The first drops are wiped away with a quick stroke.

The method of Wright and Kinnicutt calls for laking of the red blood corpuscles. Unfortunately, we have never seen a field in which the red cells were laked without the formation of artefacts. These artefacts appear as highly refractile bodies, of the size of a small platelet, and take the dye in the same manner. They may appear attached to the periphery of the "shadow" red cell, or may be entirely free. We have followed the formation of these bodies, and believe them to be identical with "Arnold bodies." Our first solution was 3.8 per cent. sodium citrate, which, although isotonic, was found occasionally to permit of "laking" or "fading" of the erythrocytes. After the addition of formaldehyd solution, 0.2 per cent., this phenomenon was much less frequent, but it still occurred. More formaldehyd caused distortion of the red cells.

It is generally agreed that the time of settling of the platelets should be shortened as much as possible. We found this to be particularly true when the open type Neubauer counting chamber was used, since evaporation alters the preparation after about twenty minutes. The high specific gravity of the solution of Buckman and Hallisey does not permit rapid settling of the platelets. Experience with the solution which we have described has convinced us that a count of sufficient accuracy for clinical purposes may be made after ten minutes, or about the time necessary for a preliminary red cell count.

Of all the vital dyes tested, brilliant cresyl blue is the best. Having made a solution as described below, which was isotonic and contained formaldehyd, we were inclined to attribute the occasional apparent hemolytic effect to the dye, which we used in 0.1 per cent. concentration. With this in mind, a series of tests were made, as follows:

Experiment showed that blood diluted 1:160 gives, on centrifugalization, a column of red cells that about half fills the narrow end of a Hopkins tube.[6] Blood was diluted 1:80 with 3.8 per cent. sodium citrate solution. To 5 cubic centimeter portions of this were added 5 c.c. each of 0.2 per cent. solutions of eight dyes, also in citrate (3.8 per cent.). The final mixture was: blood, 1:160; sodium citrate, 3.8 per cent.; dye, 0.1 per cent. This approximates the 1:200 dilution used in the counting chamber. The mixtures stood for periods of from thirty minutes to two hours, and were then centrifuged with controls, not containing dyes, for five minutes. The same speed and time were maintained in all experiments. With the trypan dyes (red and blue) and crystal violet, the bulk of precipitated cells considerably exceeded that of the control tubes; but with all other dyes, methylene blue, methyl violet, neutral red, brilliant cresyl blue and Janus green, the bulk of cells was not altered. Therefore, it was safe to assume that no important hemolysis took place in the Hopkins tubes. Parallel microscopic examinations revealed, in the cases of increased volume, swelling of the corpuscles. Occasional and irregular cases of hemolysis still occurred. Allowing the dye solutions to age as long as thirty days made no difference in our results; nor did the substitution

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* From the Department of Pathology, Western Reserve University School of Medicine.

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2. Wright, J. H., and Kinnicutt, Roger: A New Method of Counting the Blood Platelets for Clinical Purposes, J. A. M. A. **56**: 1457 (May 20) 1911.

3. Buckman, T. E., and Hallisey, J. E.: Studies in the Properties of Blood Platelets, J. A. M. A. **76**: 427 (Feb. 12) 1921.

4. Bizzozero: Arch. ital. de biol. **16**: 388, 1891.

5. Kemp, G. T.; Calhoun, Henrietta, and Harris, C. E.: The Blood Plates, Their Numeration in Physiology and Pathology, J. A. M. A. **46**: 1026 (April 7) 1906.

6. Hopkins, J. G.: A Method for Standardizing Bacterial Vaccines, J. A. M. A. **60**: 1615 (May 24) 1913.

of isotonic salt solution for sodium citrate solution. Washing the red cells before making up the original suspension caused even greater swelling of the corpuscles in some instances, but no hemolysis took place as determined by the Hopkins tube method.

Having ruled out any direct hemolytic effect of the dye, of the anticoagulant or of age of the solution, we were forced to conclude that the phenomenon was in some way related to the intimate contact (surface effect) with glass, taking place in the counting chamber. The question was clarified by the work of Fenn,[7] who found that hemolysis of washed corpuscles is more rapid when they are allowed to settle out on clean microscope slides than when they are kept in suspension, and that contact hemolysis is most marked on slightly soiled glass, hemolysis being very rapid with unfixed cells. Serum inhibited the contact effect. From the studies of Fenn and from our own, it is evident that, when using solutions for blood counting containing no fixative or only small amounts, the greatest attention must be paid to the use of scrupulously clean apparatus.

SUMMARY

The fluid recommended is a 3.8 per cent. sodium citrate solution, to which formaldehyd solution, 0.2 per cent., and 0.1 per cent. brilliant cresyl blue are added.

This diluting fluid is drawn in the blood pipet to the 0.5 mark; the freely flowing blood is drawn to the 1.0 mark, and finally the pipet is plunged back into the diluting fluid, and dilution is completed.

After the counting chamber is filled, ten minutes should elapse before the platelet count is made. During this period, a red cell count can be readily accomplished.

Great care should be taken to use scrupulously clean pipets and counting chamber to avoid contact hemolysis.

Both in experimental work with the blood of rabbits and of guinea-pigs, and in clinical work, the method proved simple and reliable.

CASE OF GANGRENE OF SCROTUM AND PENIS

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A white man, aged 34, entered the hospital, Nov. 27, 1922, complaining of severe pain in the region of the scrotum and penis. The family history was negative. The past history included the diseases of childhood, and influenza in 1918, but no other serious illness. Owing to inability to retract the foreskin, the patient, on the advice of a physician, was circumcised at the physician's office, November 21. There were no untoward symptoms until two days later, when a slight infection developed, for which he applied a strong solution of mercuric chlorid. The next day he noticed that the skin on the penis and scrotum was dead; sensation was lost, and the wound was reddened. He continued to get worse and noticed that the skin was sloughing on both penis and scrotum. The latter had swollen to several times the normal size. He was brought to the hospital. All the skin, dartos and tunica vaginalis of the scrotum were gangrenous as high as the penoscrotal junction, and the skin on the anterior surface of the penis had sloughed. The skin of the thigh was intact, as were the testes.

The patient was well developed and nourished. He was in much pain. The mucous membranes were pale and cyanotic. There was an anxious expression on the face. Examination of the head, lungs and heart was negative. The abdomen was somewhat tender all over the lower quadrant, but there were no areas of tenderness on palpation. The blood pressure was: systolic, 134; diastolic, 74; pulse pressure, 60. Blood count revealed 12,000 leukocytes, 80 per cent. polymorphonuclears and 4,500,000 red cells. The urine was normal. The Wassermann and Sachs-Georgi tests were negative. A smear made from the lower wound revealed *Streptococcus pyogenes*.

All of the dead skin was carefully removed from the wounds, and a wet dressing of potassium permanganate solution was applied until the infection had cleared up. The improvement was rapid, and on November 12 a plastic operation was decided on, with skin graft if necessary. Under spinal anesthesia, the edges of the scrotal wound were freshened and undermined slightly, beginning at the lower angle of the wound. An attempt was made to cover the testes with healthy skin flaps, which was done with the exception of a small area in the center, on which were placed several small skin grafts. The skin on the penis was so widely separated that it was not possible to approximate the edges, so a skin graft was done, and a rubber tissue dressing was applied. The scrotal wound healed by first intention with the exception of a small area near the center, but the grafts soon covered it. The penile wound healed very rapidly, and the patient was discharged, December 27, the wound to be dressed at home, only a small area requiring any attention.

This is rather an unusual case, in that the skin on both the penis and the scrotum was destroyed and sloughed without any damage being done to the surrounding skin, showing that it was doubtless a case of thrombosis of the vessels supplying the genitals, the testes being unharmed.

7. Fenn, W. O.: J. Exper. Med. **35**: 271 (Feb.) 1922.

THE USE OF SILVER ARSPHENAMIN IN THE TREATMENT OF WASSERMANN-FAST SYPHILIS

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Many articles regarding the efficiency of silver arsphenamin have appeared in the literature since Kolle,[1] in 1918, published the first of his series of reports. This much is established: it is an efficient spirocheticide; it is reasonably free from reactions, and it can be as conveniently administered as any other arsenical preparation.

The twenty-one cases reported were Wassermann fast. The patients, previous to the administration of the silver preparation, had had from four to thirty-four injections of arsphenamin and from thirteen to sixty-seven intramuscular injections of an insoluble mercury salt. The presence of a persistently positive Wassermann reaction in cases of intensive treatment is conceivably due to the continued activity of nests or foci of spirochetes resistant to medication. These foci are usually present in the cardiovascular and nervous systems. Detailed reexamination of these patients revealed evidence of activity that was unsuspected before treatment was instituted. These data are presented in Table 1. Stokes has repeatedly called attention to the multiple structural involvement in the various types of syphilis, and has exposed the fallacy of labeling a case neurosyphilis, for example, when an aneurysm and a hepatitis coexist.

TABLE 1.—TWENTY-ONE CASES OF WASSERMANN-FAST SYPHILIS SHOWING MULTIPLE TISSUE INVOLVEMENT

Osseous system	19
General glandular and splenic	17
Cardiovascular	13
Skin and mucous membrane	11
Cerebrospinal axis	10
Gastro-intestinal	4

MODE OF ADMINISTRATION

A blood Wassermann test was made on all patients before the administration of silver arsphenamin.

From four to sixteen injections of 0.3 gm. of the drug in concentrated solution (10 c.c.) were given at weekly intervals. No mercury was exhibited during the course.

At the end of the series of injections, a month's rest was given, and a complement fixation test was performed, together with a spinal fluid examination.

RESULTS

Twelve of the twenty-one patients presented a negative serum reaction. Four showed no change, and in five a

1. Kolle, W.: Deutsch. med. Wchnschr. **44**: 1177 (Oct. 24), 1211 (Oct. 31) 1918.

marked diminution in the strength of the reaction took place. No severe reactions occurred, although treatment was stopped in Case 11 because of a threatened dermatitis (toxic type). Clinical improvement was seen in nearly every case, especially when the complaint or symptom was of neurologic origin. This seemed to parallel the spinal fluid findings.

Of interest is Case 8, in which the condition was conjugal syphilis. The wife was also Wassermann fast, but responded to therapy with a negative reaction (Case 2). The husband's blood reaction was unchanged, but he was so much improved clinically that he was able to resume his occupation as a brakeman.

Case 15 was accepted for trial with misgivings, since a total of thirty-four arsphenamin and sixty-seven mercury injections had been given. No signs of arsenical intolerance appeared, and the full course of silver arsphenamin was administered, with the result that the reaction changed from total inhibition to negative.

Cases 16 and 8 did not respond although the number of injections was double.

TABLE 2.—RESULTS OF SILVER ARSPHENAMIN INJECTIONS*

Case	No. of Mercury Injections	No. of Arsphenamin Injections	Serum Wassermann Reaction	Spinal Fluid Reaction, 0.5 C.c.	No. of Silver Arsphenamin Injections	Serum Reaction After Therapy	S. F. Reaction, 0.5 C.c., After Therapy	Outstanding Features
1	18	6	3	..	8	0	..	Cutaneous
2	26	16	4	3	8	0	0	Cerebrospinal
3	14	10	3	..	8	1	..	Osseous
4	17	4	4	2	8	0	0	Gumma of the brain (?)
5	45	7	4	4	8	0	2	Cerebrospinal
6	47	6	4	3	8	0	0	Cerebrospinal and aneurysm
7	23	10	3	..	8	1	..	Latent
8	20	18	4	..	16	4	..	Aortitis
9	36	17	4	..	8	4	..	Cirrhosis
10	13	8	4	3	8	2	..	Cerebrospinal
11	27	14	4	4	8	2	0	Tabes dorsalis
12	24	6	3	..	8	0	0	Osseous
13	45	12	2	..	4	0	..	Toxic dermatitis (?)
14	56	14	4	..	8	4	0	Visceral
15	67	34	2	3	8	0	..	Paresis
16	20	6	4	0	16	4	..	Myocarditis
17	14	4	4	0	4	0	0	Poor tolerance
18	16	18	3	0	8	1	..	Cutaneous
19	65	24	4	3	8	0	..	Cerebrospinal
20	49	20	4	0	8	0	0	Cutaneous
21	31	12	3	0	8	0	0	Early tabes

* All Wassermann reactions were performed with alcoholic antigen; 0 indicates a negative reaction.

The results obtained are of importance if it is believed that a persistently positive Wassermann reaction is indicative of activity. It is my impression that, by the introduction of a distinct change in the treatment of Wassermann-fast cases, lasting good will be done the individual. I have twice seen a strongly positive reaction disappear after a prolonged absence of medication. It is, of course, impossible to estimate the permanence of the negative reactions obtained, but in two instances, four and six months after the treatment, the test was still negative.

Clinic Building.

Tuberculosis in New York in 1922.—The New York Tuberculosis Association reports that tuberculosis claimed 5,794 victims in New York City during 1922, the death rate being 99 per hundred thousand of the population. It is the first time in the history of the city that a tuberculosis death rate below 100 has been reached. In 1921 the mortality rate was 103. Up to 1919 the annual number of deaths from tuberculosis in all forms was constantly close to or slightly above 10,000. The great gain in the last few years is better realized when it is noted that the annual total now maintained is below 6,000, while since 1910 the population has increased by well over a million people. If the mortality from tuberculosis in 1910, which was then at the rate of 240 to 100,000 inhabitants, had prevailed last year, the deaths registered would have numbered 12,263. The saving of lives during 1922 due to progress against the disease, therefore, amounted in this city to 6,469.

Special Article

THE CARE AND FEEDING OF INFANTS

(Continued from page 553)

[NOTE.—This is the ninth of a series of articles on the care and feeding of infants. It is addressed to the general practitioner rather than to the pediatric specialist. When completed, the series, somewhat elaborated, will be reprinted in book form.—ED.]

CLINICAL ASPECTS OF INFANT FEEDING

The general well-being of the infant is as important as the percentage and energy value of the food formula. In considering the two important factors in successful feeding, the chemical composition is as essential as the caloric value. Otherwise one encounters profound disturbances, difficult of interpretation, and due to feeding of either insufficient or excessive amounts of the components of the diet.

The infant, therefore, must be fed amounts of fat, protein, carbohydrates, salts and water suitable to its constitution, age and physical development; these ingredients must be in proper proportion and sufficient in quantity to meet the caloric requirements of the young tissues for growth and development. The fact also must not be overlooked that the constituents of the diet must be in such form as will allow of normal digestion and assimilation.

The wide range of tolerance of infants to their food has been mentioned, and that this, probably, largely accounts for the fact that so many pediatricians have successfully fed infants on mixtures which varied greatly both quantitatively and qualitatively. In all probability another factor is important in the explanation of these successes, namely, the fact that to a certain extent fats, carbohydrates and proteins are interchangeable in the metabolic functions.

The Weight Curve.—In constructing a diet for infants, the individual needs must always be borne in mind. Allowance must therefore be made for basal metabolism, for growth, for muscular activity, and for the food values lost in the excreta (Holt). Indirect evidence as to the child's progress is best obtained by taking a careful history of its illnesses and feeding history. Direct evidence is best obtained by a careful study of the infant's physical development and weight curve. One soon learns that a study of the infant's weight is one of the simplest and most reliable clinical factors in estimating its progress. While infants vary considerably in their reaction to a given diet, according to their birth weight, subsequent care and previous diet, definite information of inestimable value is to be gained through the regular use of the scale.

For practical purposes it is necessary that we know the average gain to be expected in normal artificially fed infants. It should be remembered that the breast-fed infant will average larger gains than the bottle-fed baby during the first six or eight months of life. For comparative purposes in the estimation of overweight and underweight in infants coming under observation, the following may be taken as working averages. For accuracy, a balance scale is necessary; the ordinary dial scale is unreliable.

The average weight at birth is 7 pounds (3,200 gm., or about 3,333 gm.).

The average initial loss is 10 ounces (300 gm.), or about one tenth of the body weight at birth.

The birth weight is regained usually by the fourteenth day.

The weight is doubled at the end of the fifth month, and trebled at the end of the first year.

The average weekly gain during the first five months should approximate 5 ounces (150 gm.); during the remainder of the first year, 4 ounces (120 gm.).

The yearly gain during the second year is 6 pounds (2,727 gm.).

The gain during the third year is 4½ pounds (2,000 gm.).

The gain from the fourth to the eighth year is 4 pounds annually (1,800 gm.).

The gain from the eighth to the eleventh year is 6 pounds annually (2,700 gm.).

It is not sufficient, however, to base the determination of the amount of food on the weight of the baby alone, since two infants of the same weight may have decidedly different nutritional requirements. The fat baby requires less food per pound than the thin baby, and the overfed less than the underfed infant; the sick baby must of necessity be fed within its limits of tolerance during the acute stage of its illness. The body losses must also be compensated for during convalescence, as the baby's tolerance for food permits, by increases in the diet beyond the normal feedings per pound of body weight.

Within certain limitations, therefore, a healthy infant should show a regular gain. It is not absolutely necessary that an infant add to its body weight every day, as daily irregularities are the rule rather than the exception. The relation of the time of weighing to feeding, defecation and urination must always be taken into consideration, and under normal conditions it is sufficient to *weigh the infant once a week*. It is especially wise to impress this on a nervous mother.

Further, we must not forget that the weight curve of the nursing infant and that of the artificially fed infant differ widely, so that they cannot be directly compared. Although in the beginning the artificially fed infant gains less than the breast fed, in the course of a year he reaches the same weight. The latter at first shows larger gains, but later lags somewhat. Much more important than the weight itself is that the successive weight figures shall form a rising series.

Caloric Needs.—Having determined the infant's weight and obtained a fairly definite idea as to its general physical condition, its caloric needs should be estimated so as to gain an idea of its total dietetic needs. The estimation must of necessity be based on its existent weight curve, duly considering its general condition and its weight as compared with other infants of the same age. One should think not so much of providing a given number of heat units as of the food elements necessary to furnish those units. Each gram of fat in the diet will furnish 9.3 calories, and each gram of protein and carbohydrates, 4.1 calories.

Under this system the physician reckons the minimum daily caloric requirement, either from the present weight of the baby or what it should weigh in health, and then selects the food, so proportioning the fat, carbohydrate and protein content that it will not only meet the caloric requirements, but also will contain the proper amount in grams, of each of the constituents, to meet the infant's needs for growth and development.

In considering the caloric content, the part played by the various food components must be remembered. Benedict and Talbot [35] found that the basal requirements are highest per kilogram at about the ninth month, and steadily fall from this time up to adult life. Holt and Fales [36] estimated that the food value normally lost in the excreta is a nearly uniform proportion of the intake, about 10 per cent. for all ages after infancy, and that the requirements for growth are greatest during the first year of life, and during adolescence; also that the requirement for activity is the only factor which varies widely with different individuals. As the emaciated infant is expected to gain more rapidly in proportion to its body weight than the fat and well nourished infant, it will of necessity require a food with a higher energy quotient to maintain its growth ratio.

The sick baby will rarely be able to digest an amount covering its full needs, as estimated by its body weight.

TABLE 8.—CALORIC NEEDS

Average infants under 2 months of age, from 30 to 45 calories per pound (from 65 to 100 per kilogram)	
Average infants over 2 months of age, from 45 to 55 calories per pound (from 100 to 120 per kilogram)	
Premature and thin infants under 2 months of age, from 50 to 65 calories per pound (from 110 to 140 per kilogram)	
Thin infants older than 2 months, depending on their general condition, from 55 to 70 calories per pound (from 120 to 150 per kilogram)	

Therefore, as in every other phase of infant feeding, individual consideration is necessary. It must be remembered that the nutrition of the baby depends on the quantity of food *assimilated*, and not on the quantity *ingested*. Less food is absorbed and utilized by the infant with deficient digestive power, and overfeeding will retard its progress. A comparative estimate of the infant's diet, with a theoretical minimum, is of special value in cases in which doubt exists as to whether the retarded progress is due to insufficient food or to defective digestion and assimilation.

TABLE 9.—CALORIC VALUES OF ONE OUNCE (THIRTY GRAMS) OF VARIOUS FOODS

	Calories
Cow's milk	21
Human milk	21
Cream (16 per cent.)	54
Skim milk	11
Buttermilk	11
Buttermilk mixture	21
Albumin milk	12
Chymogen milk	21
Keller's malt soup	25
Cane sugar (by weight)	120
Maltose-dextrin compounds (average)	110
Malt-soup extract, dry, by weight	90
Malt-soup extract, dry, by volume	132
Corn syrup, by weight	80
Corn syrup, by volume	110
Flour, by weight	100
Cereal waters (1 ounce of cereal to the quart)	3

Repeated clinical experience proves that the earlier figures of Heubner and Rubner are too low for the average infant on bottle feedings. They estimated that the average healthy infant requires on the average 100 calories per kilogram of body weight during the first six months of life, and from six months to the end of the first year approximately 85 calories per kilogram; and that 70 calories per kilogram of body weight is the energy quotient on which a baby can maintain a weight equilibrium. Instead of lessened caloric needs toward the end of the first years, his increasing activities

35. Benedict, F. G.: Boston M. & S. J. **181**: 107 (July 31) 1919.

36. Holt, L. E., and Fales, H. L.: Food Requirements of Children: Total Caloric Requirements, Am. J. Dis. Child. **21**: 1 (Jan.) 1921.

demand heightening rather than lowering his food intake. Clinical observation in a large number of cases leads to the conclusion that, to assure satisfactory gain, the figures given in Table 8 must be approximated in the artificial feeding in infants.

During the first few weeks of life of the artificially fed infant it is usually difficult to approximate these figures.

Increases in the quantity of food should always be gradual, especially when malnutrition is present, and the infant must be carefully observed and increases made only as the food tolerance permits.

Estimation of the caloric content of the food *is not a feeding method*, and should be used only as a check on overfeeding and underfeeding, the scale, stools, general condition, and particularly the disposition of the infant being the ultimate guide for dietetic changes.

The *energy quotient* is the number of calories which the infant is getting per pound or per kilogram of body weight. To determine the energy quotient of the diet, the number of ounces of each food ingredient of the food mixture is multiplied by their caloric values, the products are added, and the sum is divided by the number of pounds or kilograms of the baby's weight.

ESTIMATING THE AMOUNTS OF THE INDIVIDUAL FOOD ELEMENTS

Protein.—Holt and Fales [37] found in their investigations that the protein intake of the normal nursing infant is very low, ranging during the first nine months of life approximately from 8 to 12 gm. daily. This is equivalent to about 1.5 gm. per kilogram (0.7 gm. per pound). Up to the age of 8 or 9 months the protein taken by the nursing infant seldom exceeded 12 gm. daily. Our own observations indicate that most breast-fed infants will average a daily protein intake of 2 gm. per kilogram.

When cow's milk is substituted for human milk the protein intake is considerably increased—doubled or even at times trebled. Infants from 1 month to 9 months of age receive from 15 to 30 gm. of protein daily when fed on the usual modifications of cow's milk. This represents fully 3 gm. and often 4 gm. protein per kilogram (from 1.4 to 1.8 gm. per pound). The increase in protein requirement when cow's milk is substituted for mother's milk is probably due to the difference between the two milks in amino-acid content. Mother's milk contains about twice as much lactalbumin (1.23 per cent.) as does cow's milk (0.53 per cent.). The lactalbumin, which forms two thirds of the protein of mother's milk, contains the highest proportions of the amino-acids leucin, lysin and tryptophan, of all the protein bodies. The work of Osborne and Mendel,[38] as well as that of others, has shown that lactalbumin is especially efficient in promoting growth, while casein, which forms one third of the protein of human milk (0.59 per cent.) and five sixths of the protein of cow's milk (3.02 per cent.) is of comparatively low grade as a growth protein. The chief demands for protein are for compensation for wear and tear and to provide for growth.

Holt and Fales found also that healthy children in their usual diet take about 4 gm. of protein per kilogram at the age of 1 year, the amount diminishing to about 2.5 gm. per kilogram at the age of 6 years. The young infant, as compared with the older child, requires proportionately a larger amount of protein to meet his needs for maintenance and growth. The total protein intake in the diet of infants and young children, per pound or kilogram of body weight, however, does not differ greatly in amount because the infant receives virtually all of his supply in the form of animal protein during his first year, the vegetable protein being represented by the small amount received in cereals and vegetables.

Vegetable proteins as a class are of distinctly lower grades than animal proteins. While they may be adequate for maintenance, it is hazardous with our present knowledge to depend on them for growth. Holt found that most of the children beyond the age of infancy took more than 60 per cent. of their total protein in the form of animal protein, from milk, eggs, meat, etc. The average was 66 per cent. of the total proteins from animal sources and 34 per cent. from vegetable sources. As vegetable protein cannot replace animal protein gram for gram, he believes that even if a larger proportion of vegetable protein than the usual one third of the total requirements is fed, the total protein intake must be considerably increased.

Sugars and starches, when added to a diet sufficient to meet any infant's need, will, temporarily at least, cause a greater nitrogen retention. Fats have little or no influence. Nitrogen, to be retained, must be built up into living protoplasm, and to accomplish this salts must be available. Unless they are present, the nitrogen is again excreted. Approximately 1.7 gm. of ash are retained for each 1 gm. of nitrogen (Howland), or 0.3 gm. of ash for each 1 gm. of protein.

The healthy, normal infant may be fed a minimum of 1½ ounces of milk to a pound (100 c.c. per kilogram) of body weight, which would represent 1.5 gm. of protein per pound of body weight (3.5 gm. per kilogram).

Notwithstanding what has been said on theoretical and experimental studies of the protein needs of the artificially fed infant, as compared with the amount of protein received by the breast-fed infant, it must be granted that the proteins of cow's milk cover the protein needs of the infant, and that when in excess they rarely cause nutritional disturbances if the tendency to large curd formation is prevented by boiling or alkalizing the milk.

As a working minimum, the protein contained in 1½ ounces of milk per pound (100 c.c. per kilogram) of body weight of the normal infant may be used, and in the underfed this quantity may be increased to an amount equal to 2 or 2½ ounces per pound, thereby approximating 1½ ounces per pound of what the baby should weigh for his age. Increases of milk in the diet must be gradual, the additions being governed by the child's ability to handle the food. *From what has been stated, it may be inferred that it is wise to establish the protein content in a diet, which may then be supplemented by fats, carbohydrates and salts, because protein is the tissue builder and must necessarily be a basic constituent of all diets.*

Fats.—These are necessary to the normal growth and nutrition of the human body. But to a greater extent than the other food elements, they can for a time be replaced by proteins and sugars, more especially the latter. This explains why infants fed on low fat mixtures, more especially proprietary foods, such as condensed milk, will continue to gain in weight. However, such development cannot be considered as normal,

37. Holt, L. E., and Fales, H. L.: Food Requirements of Children: Protein Requirement, Am. J. Dis. Child. **22**: 371 (Oct.) 1921.
38. Osborne, T. B., and Mendel, L. B.: J. Biol. Chem. **25**: 1, 1916; ibid. **37**: 223, 1919

because the diet, besides being low in fat, rarely contains more than 1 per cent. of protein.

Fats furnish part of the heat energy necessary to maintain the body temperature. They are stored as a reserve food. The fat is a protein saver, and when supplied in proper amount but little protein is used for the production of animal heat, thus allowing the protein to be retained in greater amount for building the body tissues.

Fat is the carrier of the fat-soluble vitamins which are essential to normal growth, and in all probability have a direct relation to mineral metabolism. Fat also has a definite relation to calcium and probably magnesium metabolism independent of that due to its vitamin content. The best results in feeding are obtained when there is a definite relation between the fat and salt intake. Infants receiving an insufficient amount of fat in their diet show an increasing tendency to local and general infection, thereby giving evidence of lowered immunity.

Some infants digest fats badly, and when a fat intolerance is once established it is overcome only with great difficulty. In such cases it is necessary to throw on the carbohydrate the burden of furnishing the necessary extra food. Such a catastrophe should be avoided, as infants receiving an insufficient amount of fat rarely thrive satisfactorily. We should therefore aim to stay within safe limits. When the diet contains an insufficient quantity of fat, a high percentage carbohydrate feeding is usually instituted. This prevents the formation of soap stools, and tends to the development of diarrhea. For the formation of soap stools it is necessary that there be no excess of carbohydrate, and that there be present in the diet a relative excess of protein or fats or both. The resulting change in the chemical content of the bowel also has a decided influence on the bacterial flora in that the fat excreted in the intestinal tract combines with alkalis, which tend to overcome an excessively acid intestinal content.

Holt, in his studies, found that the nursing infant usually receives, during its first weeks, as much as 20 gm. of fat daily, and that the total increases by the seventh month up to an average of 40 gm. daily, the latter representing about 4 gm. per kilogram (1.8 gm. per pound) of body weight. Each gram of fat has an energy value of 9.3 calories, while protein and carbohydrate each furnishes 4.1 calories per gram; therefore, each gram of fat provides for more than twice as many calories. The tendency toward normal growth and development on the part of a nursing infant on a high fat feeding illustrates the value of this element in the diet.

Our clinical experience has demonstrated that while the tolerance for the fat of cow's milk varies greatly in different individuals, most infants will digest and assimilate 1.8 of fat per pound of body weight daily. This is the quantity contained in 1½ ounces of average cow's milk of good quality (4 gm. per kilogram, the amount contained in 100 c.c.). This quantity will also supply the body needs for growth and development when associated with sufficient protein and carbohydrate.

Carbohydrates.—These are used chiefly to supply heat and energy, to supply in part material for fat foundation, thereby partly replacing the fat waste. Because of their high caloric value, they supply a large amount of energy. They are efficient sparers of protein, and will supply energy in case of fat insufficiency in the diet. Synthetically, they are converted into glycogen in the body. Fat is formed from sugar by the subcutaneous cells, which are especially adapted to this function.

Normally, in greater part, sugar is absorbed from the small intestine and is not found in the feces. If absorbed in sufficient quantity it will cause a rapid increase in weight. When insufficient carbohydrate is supplied to the body, it supplies the deficiency by breaking down the body protein.

The majority of infants have a high carbohydrate tolerance, and the same is true of most infants suffering from nutritional disturbances. Exceptions to this are seen in some of the fermentative diarrheas, some eczemas, and exceptionally in a few other conditions. Fortunately, the ability to metabolize carbohydrates is often present even though fats and proteins are poorly digested.

For practical purposes, the carbohydrates used in infant feeding may be divided into three large groups: (1) the disaccharids, of which saccharose (cane sugar), lactose (milk sugar) and maltose are the best examples; (2) the polysaccharids, of which the cereals, flours and dextrin are most commonly used, and (3) mixtures of the disaccharids and polysaccharids, combinations of which are contained in most of the proprietary infant foods.

Cane and Milk Sugars.—As regards the relative nutritive value of cane sugar and milk sugar, there is little to recommend one over the other so far as their food value and the limit of tolerance are concerned. When large quantities of lactose are fed, a laxative effect is more frequently seen than with cane sugar feeding of simillar quantities by weight. Cane sugar is heavier than lactose; two tablespoonfuls of the former and three of the latter approximate 1 ounce by weight. *Cane sugar will answer the needs of most infants.* This assertion is based on a large experience with infant-welfare patients among whom economy, of necessity, had to be considered.

The total carbohydrates (sugar contained in the milk, sugar added to the milk, and cereal, if used), should average from one-eighth to one-fifth ounce (4 to 6 gm.) per pound (from 9 to 13 per kilogram) of body weight a day. One and one-half ounces of milk, averaging 4.5 per cent. carbohydrate, furnishes 2 gm. of lactose. Normal full-weight infants will usually require a minimum addition of one-tenth ounce (3 gm.) by weight of sugar to the milk mixtures for each pound of body weight (6.6 gm. per kilogram). For underweight infants the amount should at first be calculated on the basis of their present weight, but increased if well taken, to meet the amounts indicated for a full-weight infant of similar age.

Carbohydrates needed beyond that furnished by 1½ ounces of sugar should be supplied by well cooked cereals or cereal waters, because of the danger of fermentative diarrhea. (See mixed feeding.)

Holt and Fales,[39] in their investigations on nursing infants, found that they took, on the average, about 12 gm. of carbohydrate per kilogram of body weight daily. Artificially fed infants usually received somewhat more than this. They believe that an infant of average activity should at one year be allowed about 12 gm. of carbohydrate per kilogram of body weight, the amount being decreased to about 10 gm. per kilogram at 6 years, and maintained at this value throughout the remainder of the growth period.

39. Holt, L. E., and Fales, H. L.: The Food Requirements of Children: Carbohydrate Requirement, Am. J. Dis. Child. 24: 44 (July) 1922.

The sugar content of the food of infants who have been on a low sugar diet should be gradually increased in order that they may become accustomed to the altered amounts.

In changing from one kind of sugar to another, it is always safe to reduce the quantity for a few days, further increases being governed by the infant's tolerance. Partially replacing of the disaccharids by cereal waters and gruels usually results in the amelioration of digestive disturbances following the use of excessive amounts of sugars. Clinical observations have led to the belief that both sugar and well cooked starches, after the second month, have distinct advantages in the diet.

Maltose and Dextrin Compounds.—These have little to recommend them in the feeding of most infants. They can usually be administered in somewhat larger quantities: one-eighth ounce (4 gm.) for every pound of normal weight. However, it is to be remembered that similar amounts of carbohydrates can be given by feeding cereals with sugars. In using maltose and dextrin compounds it is to be remembered that their action on the bowels varies greatly, depending on their maltose, dextrin and alkali content. Thus, we find that proprietary foods containing a considerable percentage of dextrin, in the absence of added potassium salts, are constipating, while those with a high maltose content, more especially when containing potassium carbonate or bicarbonate, are laxative in their effect.

Cereals.—Cereals in water or gruels may be added to the milk mixtures in quantities varying from one-sixtieth to one-thirtieth ounce (0.5 to 1.0 gm.) for each pound of body weight, daily (1.0 to 2.0 gm. per kilogram). Cereal waters may be used as a diluent as early as the second month of life, and the cereal gruels by the fourth month. The addition of a second carbohydrate to the infant's diet is frequently followed by increases in the weight curve out of proportion to the food value of the cereals. This is especially true when the whole grain rather than the dextrinized flours is used in the preparation. It cannot be stated whether this is due to vitamins or vegetable proteins contained in the preparations made from the whole grain. The cereals also have a decided influence on the calcium and magnesium balance, owing, in all probability, to the same factors.

TABLE 10.—GRAMS OF SALTS IN 1,000 C.C. OF MILK

	CaO	MgO	P_2O_5	Na_2O	K_2O	Cl	Fe
Human milk...	0.458	0.074	0.345	0.132	0.609	0.358	0.0017
Cow's milk....	1.72	0.2	2.437	0.465	1.885	0.822	0.0007

Salts.—Human milk contains 0.2 gm. of ash in 100 c.c., and cow's milk 0.75 gm. of ash in 100 c.c. The difference in percentage in human and cow's milk is equalized by the body's using only what is necessary for its life and growth. The salts are absolutely necessary for the life of the organism.

Holt, Fales and Courtney, in their studies on calcium metabolism, concluded that:

> The total absorption of calcium oxid varied in general with the weight of the child. . . . An excessive calcium intake apparently did not increase the calcium absorption, the excess being excreted.
>
> The average absorption of calcium oxid by healthy infants taking modifications of cow's milk was 0.09 gm. per kilogram of body weight. Since the average absorption of calcium oxid by breast-fed infants was 0.06 gm. per kilogram, it may be assumed that 0.06 gm. per kilogram is the minimum normal absorption by infants taking modifications of cow's milk.
>
> To insure the average absorption of 0.09 gm. of calcium oxid per kilogram, the intake of calcium oxid should be at least 0.19 gm. per kilogram with cow's milk feeding; to insure an absorption equal to the average found for breast-fed infants, the intake of calcium oxid should be at least 0.13 gm. per kilogram.
>
> The best absorption of calcium was obtained when the calcium intake bore a definite relation to the fat intake, that is, when the food contained from 0.045 to 0.060 gm. of calcium oxid for every gram of fat, and when at the same time the fat intake was ample, not less than 4 gm. per kilogram.

An infant receiving one tenth of its body weight in milk, that is, 100 gm. per kilogram (one and one-half ounces per pound) of body weight will have an intake of 0.17 gm. of calcium oxid per kilogram (0.08 gm. per pound). At the same time, the infant will have an intake of 4 gm. of fat per kilogram (1.8 gm. per pound).

The percentage content of magnesium, sodium and potassium salts is approximately the same in human and in cow's milk; but quantitatively, in cow's milk, it is about three times as great. Therefore, in mixtures containing the recommended amount of cow's milk there will be about 50 per cent. more of these salts than in the average quantity of breast milk taken by an infant.

Of the inorganic constituents, phosphorus ranks among the most important. Human milk contains 0.345 and cow's milk 2.437 gm. of phosphorus pentoxid per liter, a ratio of about 1 to 8. Of this, approximately 43 per cent. in human milk and 46 per cent. in cow's milk exists as organic compounds. Various authors find that from 53 to 80 per cent. of the phosphorus in cow's milk, and from 65 to 90 per cent. in human milk, is absorbed. If these figures are correct, we may be assured that there is at least sufficient phosphorus in cow's milk mixtures to provide for the infant's needs. Therefore, a question of more importance is the ability of the infant to fix in its body tissues the phosphorus which it receives in its diet.

Theoretically, at least, the iron content in breast as well as cow's milk is insufficient to meet the infant's requirements, and in both instances it must draw to some extent at least on its iron deposits. In artificial feeding it is especially important during the first six months that provision be made for supplementing from other sources the iron contained in the cow's milk.

Salts are necessary for building the body tissue, and each gram of protein retained and built into the body tissue requires approximately one-third gram of ash.

The average infant receiving cow's milk, with its greater salt content, lives on a higher plane of mineral metabolism than one receiving breast milk. In the majority of infants, this excessive salt intake undoubtedly does no harm; the surplus is not absorbed, and is merely eliminated.

Sodium and potassium are usually well retained, unless severe diarrhea is present or there is an excess of fat or of sugar in the diet. Under such circumstances the salts are lost, and the loss is badly borne and cannot indefinitely be continued. When all available alkalis have been drawn on, the infant breaks down its own tissue to furnish more of these substances, which explains, in part at least, the excessive nitrogen excretion in such cases. When diarrhea ceases and the intake is sufficient, a positive balance is rapidly instituted.

(To be continued)

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SATURDAY, MARCH 3, 1923

PHYSICAL CAPACITY IN CHILDHOOD

It has become the custom in recent years to speak glibly of "corrective exercises," with the implication that they may play a noteworthy part in both the prevention and the cure of undesirable conditions, particularly during the period of adolescence. If the alleged effectiveness of various types of muscular activity is as real as it has been pictured to be, the subject assuredly deserves most respectful attention from the clinician. A recent writer has remarked that because muscular exercise is so constantly a part of daily life and so obvious in its practical application, medical practitioners have come to regard its physiology as an established truth, into the true nature of which search is unnecessary. The subject of muscular exercise, he adds, should be of more than mere academic interest to the pediatrician.

The problem of exercise in childhood, furthermore, is of importance not only because of the advantage that may be gained from intelligently regulated muscular performance, but also with reference to inherent dangers as well as benefits. During the period of adolescence, when the body is growing rapidly and various vital organs are in process of developmental adjustment, exercise should never be carried to the extreme. Williams [1] has wisely reminded us that in children the one quality that should not be tested is endurance. Many instances are on record of high school athletes being "burned out" by too intensive participation in scholastic sport. Exercise should be used, Williams adds, to build strength and power in the youth, not to waste them. Emerson [2] has warned against the danger for the undernourished child, even in play, that he will engage in games beyond his strength, or indulge in them for too long a time without rest. Emerson believes that there has been a tendency to overrate the importance of corrective exercises. It should be recognized, he states, that most cases of bad posture are due to the general weakness of a body with too little weight to support its height. When this condition exists, the first need is to start the child on a program that will bring him up to his normal weight, when it will be found that, as weight increases, the posture improves.

For the present, the precise relationship between cause and effect in connection with postural defects and exercise need not be debated. It can scarcely be questioned that, in any event, physical therapy should be based on physiologic knowledge. THE JOURNAL has often taken occasion to point out how meager is our scientific information regarding the physiology of exercise. Before deciding wherein one may drive or neglect the muscular system, its capacities and limitations must be learned. Facts recently gathered by Seham [3] at the University of Minnesota Medical School have a bearing in this connection. They show that, in normal children of school age, all forms of exercise produce an increase in the pulse rate and the blood pressure, the increase depending mainly on the type of exercise. In the majority of cases, the increase of the pulse rate and the blood pressure, as well as the reaction time of the blood pressure, are in direct proportion to the speed and the amount of work performed. These are evidently the same sorts of responses as are encountered in adults. The physical capacity of children, as judged by the maximum physical output, is in direct relationship to the age, circumference of the chest, circumference of the thigh and the vital capacity; height and weight do not alter it so constantly. Such information is part of the essential prelude to an intelligent advocacy of play or the prescription of corrective exercises.

1. Williams, J. F.: Personal Hygiene Applied, Philadelphia, W. B. Saunders Company, 1922.
2. Emerson, W. R. P.: Nutrition and Growth in Children, New York, D. Appleton Company, 1922.
3. Seham, M., and Egerer-Seham, Grete: Physiology of Exercise in Childhood, I, A Study of Normal Children of School Age, Am. J. Dis. Child. **25**:1 (Jan.) 1923.
4. Osborne, O. T., and Fishbein, Morris: Handbook of Therapy, Chicago, American Medical Association, 1920.

THE GROWTH OF HAIR

The growth of hair presents some sort of problem to innumerable persons, among whom many approach the physician to secure a solution of the difficulty involved. On the one hand are the hordes of people of both sexes and in all walks of life who complain of alopecia. In its extreme forms it shows "a bald, glistening crown closely drawn over the skull." This sad picture, it was recently stated,[4] is senile, spontaneous or simple baldness. Premature baldness, it is added, is the same thing, save for the fact that it occurs before the age when these changes, which we ordinarily attribute to old age, are expected to appear. To the victims of such circumstances is left the invidious choice of accepting a condition for which no remedy can logically be expected, or of assuming the existence of a seborrheic dermatitis, for the treatment of which no two experts may agree.

The other class of unfortunates consists of those who seek to overcome a hypertrichosis, or excess of hair, on some part of the body. The simplest expedient, cutting off the undesired growth, often meets strenuous objection on the ground that such a procedure is likely to cause subsequent overgrowth. Similar stimulation is believed by many to be associated with applications of various cutaneous lubricants; and sunlight also is charged with encouraging hypertrichosis.

Careful measurement furnishes the best index of growth in any domain of biology. Hence the value of studies recently made in the Department of Anatomy at the Washington University Medical School, St. Louis, by Trotter,[5] on the normal character and rate of hair growth. Four regions of the body were considered: the axilla, a spot on the head just back of the vertex, the outer side of the forearm, and a region on the leg just below the knee. These selected areas were shaved very closely, and then at weekly intervals several hairs were pulled out and later measured. The differences between the successive measurements, after the first seven-day period, gave the weekly rate of growth. This was shown to be different in the different regions. It appears that the hairs on the arms and legs do not fall out and are not replaced by new ones for a period shorter than eleven weeks.

Shaving, in particular, is regarded as a cause of hypertrichosis; but no justification for this widespread belief could be secured. Likewise, the assumption that sunburn has at best any more than a very transient effect on hair growth fails to receive any support from the observations at St. Louis. Finally, petrolatum, which ranks very high in the popular estimation as a stimulant of hair growth, failed to produce results that spell proof. A true promoter still remains to be discovered.

WHAT WE GET WHEN WE SMOKE

One of the substances abundantly present in tobacco smoke is carbon monoxid, well known as the lethal agent of illuminating gas and of the exhaust gas of motors, which has had so many victims in recent years. Carbon monoxid is not directly poisonous, but displaces oxygen from hemoglobin, for the red cells have 225 times as great an affinity for this gas as for oxygen. Baumberger [6] has found that tobacco smoke may have from 7.2 to 25 parts of carbon monoxid in 10,000 parts of air, a concentration which Henderson found capable of causing serious symptoms if inhaled for more than an hour. But persons never take in undiluted smoke—the heartiest cigaret fiends and the most resolute pipe smokers always take many breaths of fresh air between puffs. It is estimated that if a person should smoke continuously for one hour, inhaling the smoke five times a minute, there might occur as high as 22 per cent. saturation of the hemoglobin by carbon monoxid, a concentration sufficient to produce headache and perhaps an oxygen shortage during activity; but this figure is undoubtedly far above what smokers do actually accomplish. Perhaps 10 per cent. is more nearly the maximum reached in smoking, a figure that has not been found ordinarily to produce symptoms.

Formerly the statement was current that the chief toxic material in tobacco smoke is pyridin, derived by decomposition of nicotin; but later studies agree in indicating that the nicotin is the chief active agent, tobacco smoke exerting much the same physiologic effects as nicotin in corresponding concentrations.[7] By direct analysis, Baumberger found that cigaret smoke contains between 14 and 33 per cent. of the nicotin present in the tobacco smoked. Cigarets weigh about 1 gm. apiece, and about 80 per cent. of the tobacco is smoked, so that the nicotin in the puffed smoke amounts to about 5 mg. for each cigaret. Of this, about 67 per cent. is absorbed if the smoke is merely taken into the mouth, but 88 per cent. is absorbed if the smoke is inhaled into the lungs. How much of this reaches the blood depends chiefly on how much is lost in saliva, the drooling of the novitiate being an important protective measure, since from 3 to 5 mg. of nicotin dissolved in water, taken within half an hour, may cause severe symptoms in nonsmokers, whereas habitual smokers can endure twice as much.

These figures show that an unventilated room 10 feet square and ten feet high, occupied by ten men all smoking cigarets to the best of their ability for an hour, would come to have an air containing about two parts of carbon monoxid and enough nicotin to furnish 2.6 mg. an hour to the person compelled to breathe it. While these are not large amounts in figures, it is certain that any nonsmokers, and many smokers, in such an environment would have a headache, which is ascribable to the increased intracranial pressure that is produced by both the nicotin and the decreased oxygen in the blood. If our hardened cigaret smoker were to puff away steadily for an hour he might absorb as much as 36 mg. of nicotin if he inhaled, and 27.5 if he only puffed. These are amounts that would undoubtedly produce marked effects even on the habituated, but there is at least the consolation that the lethal dose is 500 mg. taken at one time. However, the smoker gets much besides carbon monoxid and nicotin, for the solids of cigaret smoke weigh about 10 per cent. of the tobacco burned, or about 80 mg. for each cigaret, and all the things it may contain besides the aforementioned are not known; but the experimental evidence indicates that nicotin and carbon monoxid account for most if not all the observed effects.

It is to be considered that these experiments were carried out with cigarets, for the observations of Lee indicate that tobacco burned in cigarets yields much

5. Trotter, Mildred: The Resistance of Hair to Certain Supposed Growth Stimulants, Arch. Dermat. & Syph. **7**: 93 (Jan.) 1923.

6. Baumberger, J. P.: J. Pharmacol. & Exper. Therap. **21**: 23 (Feb.) 1923.

7. Lee, W. E.: Quart. J. Physiol. **1**: 335, 1908. Von Leeuwen, W. S.: Arch. f. exper. Path. u. Pharmakol. **84**: 283, 1918.

less nicotin, and presumably less carbon monoxid, in the smoke than when burned in cigars or pipes. For example, a Manila cigar and a cigaret of Virginia tobacco were so burned that the same amount of tobacco was consumed in equal time, and the effect of the products of the combustion determined; it was found that although the cigaret tobacco used contained nearly twice as much nicotin as the cigar tobacco, the smoke of the latter was twice as toxic as the cigaret smoke. The explanation for this is that during the slow combustion of a cigar, as in ordinary smoking, immediately behind the point of combustion is an area in which the water and other volatile substances condense; during the act of smoking, the hot gases pass through this moist area and volatilize the more volatile principles of the tobacco, of which nicotin is one. Therefore the smaller the moist, hot area behind the point of combustion, and the more rapid and complete the combustion, the less likely is the smoke to contain volatile toxic bodies; hence a cigaret or a slender cigar will yield fewer of these products than a thick cigar, and many smokers can testify that a thick, "fat" cigar has much more effect than a long, slender cigar of similar tobacco. The unpleasant effects that the unaccustomed smoker experiences on relighting a half-finished cigar or pipe are explained on the same basis.

HAVE SPERMATOZOA FUNCTIONS AND EFFECTS OTHER THAN FERTILIZATION?

Have spermatozoa any function aside from that of the propagation of the race? is a question that has arisen because of some recent experiments. Guyer [1] showed that when male rabbits and guinea-pigs are injected intravenously with specific spermotoxic serums prepared from fowls, or with spermatozoa directly, sterility results, and the serum of the animal becomes spermotoxic. When the spermatozoa are injected intravenously, according to Tsukahara,[2] they may cause severe toxic reactions and even death, male animals being more sensitive, and pregnant females more so than nonpregnant.

McCartney [3] did not use spermotoxic serums, as did both Dittler [4] and Guyer, but spermatozoa suspensions directly. In a series of seventy-nine female rats subcutaneously injected with doses of the spermatozoa suspension up to a total of 3 c.c., each cubic centimeter containing 80,000 spermatozoa, he found that the rats remained sterile for a period of from two to twenty-two weeks beyond the normal gestation time, although the normal sexual cycle and sex behavior of the rat seemed in no way altered. The period of from two to twenty-two weeks at first consideration does not appear to be lengthy, but these results become significant when we consider that the rat is a short lived animal and that a rat 3 years old corresponds to a human being 90 years old. From careful manipulation and tests he concludes that the spermotoxins are present in the vaginal and uterine secretions, and have an immobilizing and agglutinating effect on the spermatozoa. Thus, we can conceive of this mechanism acting in the generative tract to kill the spermatozoa introduced by normal coitus, and thus prevent impregnation of the ova. By examination of incubated eggs from immunized hens he confirmed this conclusion. He also concludes that the degree of immunity is proportional to the amount of the spermatozoa suspension injected, and under proper precautions no deleterious effects are to be expected in the normal nonpregnant female so treated, although he found that the injections tended to cause abortion of existing pregnancy. It is also interesting to note that he found that after the immunity by the injection of spermatozoa had worn off, the female was able again to bear normal young. While spermatozoa injected subcutaneously appear to cause no harm to the female organism other than to cause transient sterility, they seem to have toxic action on the male when similarly administered, as shown by the results of both Guyer and McCartney. In male animals so treated, the spermatozoa in vivo were found immobilized, and the testes in several cases were found atrophied.

From clinical observations, Mayer [5] and Vogt [6] conclude that spermotoxins may have a therapeutic, social and economic aspect. Mayer states that abortion of very young ova may result from frequent coitus after a long period of abstinence. Frequent bursting of follicles may result after sexual intemperance, and this may hinder the formation of a corpus luteum, which is so necessary for the embedding of the ova. The toxic effect of sperm overloading may be a reasonable explanation. Vogt assumes that sperm overloading leads to sterility and that a natural cure occurs after prolonged abstinence from sexual intercourse. The first cohabitation is the one that most frequently results in conception, and this may be explained by the absence of the later acquired immunity to spermatozoa. The increased sensitiveness immediately after the menses may be due to the period of abstinence during the menstruation and the consequent weakening of the sperm immunity. Vogt further states that the increased capacity of function of a hypoplastic genital apparatus after marriage, and the disappearance of chlorosis, could be explained by the stimulus of the sperm albumin substance, and this effect seems to be a permanent one. Excessive coitus is thought to cause the woman to lose weight. Vogt gives sexual abstinence as a possible explanation for the rarity of eclampsia

1. Guyer, M. F.: Immune Sera and Certain Biological Problems, Am. Naturalist **55**: 637, 1922.
2. Tsukahara, I.: The Biology of the Male Sexual Cells, Ztschr. f. Immunitätsforsch. u. exper. Therap. **34**: 444, 1922.
3. McCartney, J. L.: Studies on Sterilization of the Female by Spermotoxins, Am. J. Physiol. **63**: 207 (Feb.) 1923.
4. Dittler: Spermotoxic Serums, München. med. Wchnschr. **67**: 1495, 1920.
5. Mayer, A.: Increase of Sterile Marriage Since the War, Klin. Wchnschr. **1**: 1142, 1922.
6. Vogt, E.: Sterility and Sperm Immunity, Klin. Wchnschr. **1**: 1144, 1922.

and hyperemesis gravidarum during the war. Thus, we can see that, in cases of sterility, the probability of sperm overloading must be considered. Some claims for the therapeutic value of sperm albumin in the treatment of disease have been advanced, but these lack experimental proof. Specific precipitins may be secured for spermatozoa, as shown by Hektoen,[7] so that this fact may be used medicolegally.

Whether injection of spermatozoa or spermotoxic serums may be used as a method of sterilization in human biology is a question of the future.

SOME ACHIEVEMENTS OF BIOCHEMICAL ANALYSIS

Even the most enthusiastic optimist would doubtless admit that there are many paths in medicine that lead to discouragement or dissatisfaction. Those who pursue them need to be encouraged from time to time so that they will not falter. He who is brought face to face daily with seemingly insuperable difficulties in diagnosis or therapy is likely to acquire a deadening inertia from such situations unless there is some new spur to his initiative. A retrospect of progress often serves to remind us of how frequently the unexpected happens, and how occasionally the supposedly insoluble is solved. The history of modern microchemical technic in the service of medicine affords an illustrative instance. Myers [8] has recently pointed out with full justice that, during the decade from 1910 to 1920, the chemical composition of the blood was a topic of increasing interest and importance, quite eclipsing in significance the studies carried out on the urine during the preceding decade. In the case of urine, the advances were primarily the result of the impetus furnished by the new methods of Folin and of S. R. Benedict, and these workers, together with Van Slyke, are responsible for many of our new methods of blood analysis. During the latter period the blood has probably been the topic of more studies than any other body tissue, fluid or secretion. The practical importance now attached to the chemical examination of the blood, Myers concludes, would appear to be rapidly overshadowing the importance formerly attached to urine examination.

A singularly excellent example of the perfection of the analytic technic applied to blood is furnished by recent studies on the interrelations of mother and fetus. By pioneer experiments involving examinations of the blood removed simultaneously from the two organisms, parent and offspring, Slemons [9] demonstrated an impressive equality of the nonprotein nitrogenous substances in maternal and fetal blood. Thus, in twenty cases the results for the two organisms did not differ by more than a milligram, and in the others the difference was usually less than two milligrams. The most instructive illustration of this similarity in the composition of maternal and fetal blood is afforded by a case of twins in which the mother presented 30 mg. and each infant 30.2 mg. of nonprotein nitrogen for each hundred cubic centimeters of blood. Such strict equality of concentration, Slemons was forced to conclude, cannot well be explained on any other basis than that of simple diffusion through the placental barrier.

More recently, Howe and Givens [10] have made independent comparisons of the blood of mother and fetus in patients at full term. They, too, found only slight discrepancies; and when the values were calculated, almost identical figures were obtained. The average nonprotein nitrogen for mother's blood was 23.8 for each hundred cubic centimeters; for fetal blood it was 23.8. Slemons [9] found in the case of the mother an average of 25.2 mg. of nonprotein nitrogen for each hundred cubic centimeters of blood, and in the case of the fetus, 24.9 mg. The possibility of dealing to such a degree of accuracy and agreement with small samples of blood in which the variations involve at most a few milligrams of urea for each hundred cubic centimeters of blood represents a real achievement in biochemical analysis. A science equipped with such helps is more than likely to employ them in fruitful investigation.

Current Comment

ABRAMS' DIVINING ROD: THE APOTHEOSIS OF BUNCOMBE

"Oil Locating Machine Aim of Dr. Abrams. Mysterious Device To Be Exhibited Soon." Thus a Los Angeles paper for February 12 heads, in large and black type, an article detailing the alleged claim of Albert Abrams [11] of San Francisco that he has about perfected a machine that will locate the subterranean position of oil. The claim may not be as new as it seems. In his book "New Concepts in Diagnosis and Treatment," published six years ago, Abrams declared that the divining rod is not a superstition and does not belong to occultism "but is entitled to consideration as a scientific fact." In the same book Abrams declared that with his instrument, the "Sphygmobiometer," "it is now possible to demonstrate the wave-metric index of water, oil and minerals." He continues further:

> Thus subterranean determination of the foregoing as a prerogative of the specially gifted must be relegated to scientific reality. By aid of the apparatus in question, one may even venture further and ascertain quantity and depth.

Abrams was vague—as usual—regarding the details of this wonder and to the paragraph just quoted he appended the footnote: "It is impossible to describe the author's methods. They demand personal demonstration. . . ." But why should one express aston-

7. Hektoen, Ludvig: Specific Precipitin Test for Human Semen, J. A. M. A. **78**:704 (March 11) 1922.
8. Myers, V. C.: Barker's Endocrinology and Metabolism, III, 1922, p. 423.
9. Slemons, J. M.: The Nutrition of the Fetus, New Haven, Yale University Press, 1919.
10. Howe, Marion G., and Givens, M. H.: Chemical Studies of the Blood of Mother and Fetus, Am. J. Dis. Child. **25**:63 (Jan.) 1923.
11. A reprint of the Abrams vagaries will be sent on receipt of four cents in stamps.

ishment regarding this particular claim of Abrams? To the man who can tell from the autograph of old Samuel Pepys that the famous diarist suffered from congenital syphilis, surely the locating of oil and mineral deposits should be a mere bagatelle. To the man who, from a drop of dried blood, can tell whether the owner of the sanguineous fluid is a Scotch Presbyterian, a Hard-shell Baptist, a Seventh Day Adventist, a Knight of Columbus or a member of the B'nai B'rith, the development of a divining rod is mere child's play. Seriously, however, the disciples of Abrams will needs be more careful in the exploitation of an "oil locating" machine than in their present stunts of diagnosis and treatment of human ailments. Abrams' followers are diagnosing syphilis, cancer, tuberculosis and many other serious diseases in persons not suffering from those diseases and they "get away with it." When the medical profession in the interest of the public protests the findings, the reply is: Your methods of diagnosis are so crude and insensitive that you are unable to find what we have found. This alibi will not work in the less dangerous field of locating oil and minerals. Because of the public's ignorance of the human body and its processes it permits the grossest frauds to be perpetrated when done in the name of the healing art; it resents most savagely, however, chicanery and humbug when property rights are involved. One thing must be said for the Abrams cult: Whatever skepticism we may have of Abrams' accomplishments, he must be given credit for the discovery of the modern Philosopher's Stone, with which his followers transform the dross of credulity and hopefulness into shining shekels of gold.

LOCAL VERSUS GENERAL IMMUNITY

Metchnikoff classified cells that exhibit phagocytic activity into two groups, the microphages and the macrophages. To the former belong the important phagocytes of the circulating blood which have attracted so much attention in all modern considerations of the mechanisms of immunity and the defenses of the organism against bacteria. The macrophages include, in the foremost place, the endothelial cells, although all the primary cells of fixed tissue may be included in the group. Although they are reputed to be most active in ingesting inert tissue detritus, macrophages have been shown to take up bacteria, as in tuberculosis; while pneumococci and streptococci are known to be subject to removal from the circulation by endothelial cells lining the blood vessels.[1] In his presidential address before the American Association of Immunologists, Gay [2] has stressed anew the importance of the cells derived from the fixed tissues; at any rate, he refers to the gradually increasing conjecture that macrophages of local origin are in some way connected with prolonged and sometimes healing processes in streptococcus infection. Thus, a local as distinguished from a general immunity to certain micro-organisms may arise. Only on this hypothesis is it at present possible to explain a tolerance to specific germs when they enter by certain portals, such as the skin or cutaneous wounds, whereas they may be highly damaging when introduced intravenously. It seems likely, therefore, as Gay concludes, that an appreciation of the local nature of some forms of acquired resistance to bacteria may eventually be of service in improving the method of combating localized infections.

1. Karsner, H. T., and Ecker, E. E.: The Principles of Immunology, Philadelphia, J. B. Lippincott Company, 1921, p. 154.
2. Gay, E. P.: On Local and General Immunity, J. Immunol. 8: 1 (Jan.) 1923.

PLACENTAL FUNCTION

If further evidence were required to substantiate the view that the distribution of nutrients and waste products across the placental barrier between mother and fetus does not involve any more complex mechanism than is afforded by the passage of diffusible substances, it could be found in two recent biochemical researches on the blood. Givens and Howe [1] have established anew that diffusion offers the most reasonable explanation for the passage of the nutrient amino-acids and glucose, on the one hand, and such catabolites as urea and uric acid, on the other, through the placenta. The concentrations of each of these substances tend to be essentially the same in the maternal and fetal bloods. This corresponds with the free interchange of diffusible substances that might be anticipated. Quite different, however, are the comparisons of the nondiffusible fats and lipoids in the bloods of mother and fetus at the conclusion of labor. Slemons and Stander [2] have reported observations from the department of obstetrics at Yale University which teach that the placenta is impenetrable to these compounds. During the latter part of pregnancy the fat, phosphatid and cholesterol of the blood are more abundant than usual, perhaps as a physiologic preparation for lactation. The mother's blood contains much more of these substances than does the fetal blood. The difference that exists between the two organisms in this respect varies from case to case; and Slemons and Stander assert that the values prevailing in one seem to be entirely independent of those in the other. Consequently, they conclude that fetal fat must be synthesized, probably from glucose, which is freely supplied by the mother in accord with the demands of the offspring and which readily passes through the placenta.

1. Givens, M. H., and Howe, M. G.: Chemical Studies of the Blood of Mother and Fetus, Am. J. Dis. Child. 25: 63 (Jan.) 1923.
2. Slemons, J. M., and Stander, H. J.: The Lipoids of Maternal and Fetal Blood at the Conclusion of Labor, Bull. Johns Hopkins Hosp. 34: 7 (Jan.) 1923.

HOOKWORM DISEASE IN THE PHILIPPINES

Numerous surveys have indicated a widespread infestation with intestinal parasites among the inhabitants of our insular possessions in the Philippines. The published records involving thousands of examinations in various places there show an incidence well above 80 per cent. In a series of 500 necropsies at Manila, reported by Crowell and Hammack in 1913, for example, intestinal parasites were found in more than 90 per cent. of the cases. In view of this extensive parasitism it seems somewhat surprising that hookworm disease has given occasion to so much less concern in the Philippines than it has in many other parts of the world, in some of which much scientific

activity is being devoted to the subject at present. Is it due to a comparatively light infestation in these islands or to some sort of immunity? The investigations of Schwartz and Tubangui [1] at Los Baños may throw light on the question. They have secured information from a very representative group of the population by examining the matriculants at the University of the Philippines. The majority (approximately 85 per cent.) of these normal adult Filipinos were infested with one or more intestinal roundworms. Approximately half of them showed infestation with hookworm of either the New World or the Old World species, but the vast majority were very lightly parasitized. Clinical symptoms of hookworm disease are absent, as a rule. Whether a racial immunity is involved in this resistance or whether purely physical or other conditions unfavorable to the life of hookworm eggs and larvae in the soil are responsible for the light infections remains to be ascertained. However, Schwartz and Tubangui believe that the prevailing notions concerning the lightness of hookworm infestation and the absence of clinical symptoms in Filipinos harboring these parasites, though supported by considerable evidence, should be confirmed by further investigation before the lack of medical importance now attributed to hookworm infections in the native population is accepted as an established fact.

1. Schwartz, B., and Tubangui, M. A.: The Prevalence of Hookworm and Other Intestinal Nematodes in Adult Filipinos, J. Parasitol. 9: 83 (Dec.) 1922.

Association News

THE SAN FRANCISCO SESSION

Special Trains Over Various Routes from Eastern Cities

Following is further information concerning special trains to and from San Francisco, and railroad rates from principal cities. See also THE JOURNAL, January 27, p. 258.

NEW YORK SPECIAL

A special train will be operated from New York to San Francisco by way of Chicago, and over the Santa Fe through the Grand Canyon and Los Angeles. THE JOURNAL, January 27, gives further details. Dr. E. Livingston Hunt, 17 West Forty-Third Street, New York, is chairman of the committee in charge of this train.

MICHIGAN GOLF SPECIAL

The "Michigan Golf Special" from Chicago to San Francisco will leave Chicago, June 17, at 8 p. m., and will stop at Omaha, Denver, Salt Lake City, Lake Tahoe and Del Monte, at each of which places a round of golf will be played by those aboard. This train is due to arrive in San Francisco at 8 a. m., June 23. Dr. F. C. Warnshuis, Powers Theatre Building, Grand Rapids, Mich., will give information.

OHIO SPECIAL

The Ohio State Association Special will be operated under the direction of the officers of that association. Mr. Don K. Martin, executive secretary of the Ohio State Medical Association, Columbus, Ohio, will furnish information concerning reservations.

HARLAN TOURS

The Harlan Tours of Chicago will operate the "Medical Special De Luxe." Information about this train was given in THE JOURNAL, February 3.

SANTA FE CHICAGO SPECIAL

The Santa Fe Railroad will run a train, to be called the "American Medical Special," which will leave Chicago at 8:15 p. m., June 16. Short stopovers will be made at Kansas City, Colorado Springs, Santa Fe and Albuquerque. The day of June 20 will be spent at the Grand Canyon. This train is due in Los Angeles at 3:30 p. m., June 21. From Los Angeles, choice may be made of rail or boat service to San Francisco. Detailed information may be obtained from J. R. Moriarty, Division Passenger Agent, A. T. & S. F. Ry., 179 West Jackson Street, Chicago.

Side Trips from San Francisco

Dr. W. E. Musgrave, chairman of the Local Committee of Arrangements at San Francisco, has submitted information concerning tours which may be taken, with San Franciso as a starting point, after the annual session:

A three weeks' trip to Honolulu on a special boat, touching all principal ports, including the leper colony, and return to San Francisco.

A trip up the western coast to Alaska and return. Those desiring to do so may leave the boat at Vancouver and return east over the Canadian Pacific, or at Seattle and return east over the Great Northern, or at Portland and then east over any available line. Returning to San Francisco, those who take this coast trip may return east by way of Los Angeles or the Panama Canal.

An oriental tour beginning at San Francisco, and leaving that city a day or two after the close of the annual session. Such tours will include Japan, China and the Philippine Islands and return to San Francisco, or a return by way of the Suez Canal and Europe.

A trip to Honolulu, with six days in that city and on the Island of Oahu, and two days in Hilo and the Kilauea National Park, with a visit by day and by night to the active volcano of Kilauea.

An Alaskan tour, embracing a twenty-four day cruise. Stops will be made at Ketchikan, Wrangell, Petersburg, Taku Glacier and Juneau. At Skagway a railroad trip to Bennett Station will be begun; returning, the boat will proceed to Sitka, from which place six days will be spent in the inside passage en route to Seattle. From Seattle a four days' trip to Rainier National Park will be made.

A tour which includes visits to Yellowstone, Glacier and Rainier national parks.

A comprehensive tour that will take four weeks for sightseeing in the Canadian Rockies.

Inquiries concerning transportation from eastern ports to San Francisco by way of the Panama Canal should be referred to steamship offices. It will be possible for those who wish to go to San Francisco by way of the Panama Canal to return by railroad.

For further information regarding side trips, address Chairman, Committee of Arrangements, 806 Balboa Building, San Francisco.

Railroad Rates

The following summer tourist round trip rates are submitted, on what is thought to be thoroughly reliable information, as approximately the rates that will be in effect for the annual session: from Chicago, $86; from Kansas City, $72; from St. Louis, $81.50; from Omaha, $72; from New Orleans, $85.15; from Atlanta, $106.85; from Boston, $144.80; from Buffalo, $116.10; from Cincinnati, $101.35; from Memphis via St. Louis, $85.15, but via Chicago, $93.20; from Cleveland, $105.65; from Detroit, $101.70; from Indianapolis, $95.70; from New York, $138.32; from Jacksonville, Fla., $119.83; from Philadelphia, $133.14; from Pittsburgh, $113.05; from Washington, $130.45; from Nashville, $94.85; from Louisville, $97.75; from Richmond, $130.45.

These rates will permit stopovers, and will also permit return by a different route than that used in going to San Francisco. Those desiring to return by way of the northern routes will be required to pay $18 additional.

Differentiation of Microbial Species.—The differentiation and classification of microbial species is certainly the most difficult of all problems in bacteriology. When one finds what he considers a new species, he is at once aware of the lack of means to characterize it adequately so that it may be recognized by others.—Bushnell, *J. Bacteriol.*, July, 1922.

MONTANA

Rocky Mountain Spotted Fever Investigation.—Several distinguished scientists, including Dr. Simeon B. Wolbach of the Harvard Medical School, Boston, and Dr. Hideyo Noguchi of the Rockefeller Institute for Medical Research, New York, are at Hamilton, conducting research work on Rocky Mountain spotted fever. Their work will continue for several months.

NEW MEXICO

Appropriations for Health Work.—An increase of $11,000, or a total of $38,000, is being asked by the New Mexico Bureau of Public Health for health work in the state. It is also asking the legislature for appropriations to assist counties in developing full-time county health departments.—— The state department of health has announced that it will lend state films, slides and card exhibits dealing with venereal disease and social hygiene to county and city health officers; also stereopticons, portable moving picture projectors and card exhibit frames. A few slides on the subjects of milk, food, teeth, adenoids and tonsils are available for loan.

NEW YORK

Memorial to Dr. Wyeth.—A memorial service for Dr. John A. Wyeth, who died in May, 1922, was held at the New York Polyclinic Medical School and Hospital, February 27.

Triplets Break Record.—The superintendent of the Nursery and Child's Hospital reports that for the first time in the ninety-nine years of the institution's existence, triplets were born there, February 24.

A New Name for Bedford Reformatory.—Managers of the State Reformatory for Women at Bedford have applied to the legislature for permission to change the name of the institution to "Bedford Farms."

Dinner for Dr. Jennings.—Dr. Frank D. Jennings, past president of the Kings County Medical Society, was guest of honor at a dinner, February 17, in Brooklyn, as centenary president of the organization. Dr. William F. Campbell presided at the dinner, at which more than 200 borough physicians were present.

Scholarships for Ophthalmologists.—The Italian Medical Society of New York has been notified by the Department of Ophthalmology of the University of Rome that two assistantships without salary are offered to American medical graduates of Italian extraction. Further information with reference to these scholarships may be had by writing to the Societa Medica Italiana, 47 West Forty-Second Street, New York.

Investigation of Narcotics Proposed. — Assemblyman Maurice Bloch of New York, who recently introduced a bill into the legislature providing for the restoration of the old system of reinforcing the federal antidrug act by local authorities, has introduced a concurrent resolution providing for investigation of the drug evil by a commission composed of two senators, three assemblymen and three citizens, to be appointed by the governor. The resolution carried an appropriation of $20,000 and gives the commission a year in which to complete the proposed inquiry.

Personal.—Dr. Paul W. Beavan, Rochester, spoke on "Hypertrophic Stenosis of the Pylorus," before the Rochester Pathological Society, January 18.——Dr. Maurice C. Ashley, for more than twenty years superintendent of the State Homeopathic Hospital, Middletown, has resigned, the resignation being effective May 1.——Dr. Francis E. Fronczak, health commissioner of Buffalo, was decorated with the Polish Cross of Valor at the Polish consul's office, February 16, for services rendered with the Polish army. This is the third decoration Dr. Fronczak has received from Poland.

Physicians Organize to Fight Narcotics.—Appointment of a committee of fourteen physicians to act in an advisory capacity to the Society for the Suppression of the Narcotic Drug Evil was announced by Dr. Copeland, February 14. Members of the committee are Royal S. Copeland, chairman; Wendell C. Phillips, trustee of the American Medical Association; Daniel S. Dougherty, secretary of the Medical Society of the County of New York; Carleton Simon, special deputy police commissioner in charge of narcotic work; Charles L. Dana, chairman of the public health committee of the New York Academy of Medicine; Arthur F. Chace, president of the county medical society; Antonio Stella, Harlow Brooks, Eugene H. Pool, Samuel J. Kopetsky, Charles H. Peck, Orrin S. Wightman, Frederick E. Sondern and John E. Wilson.

New York City

Schools Close on Account of Illness.—The prevalence of colds, influenza and pneumonia led the board of education to grant a recess, February 22-26. February 19, there were 2,000 teachers absent from their classes, 800 of which had to be suspended.

American College of Rehabilitation Organized.—At a meeting held at the New York Academy of Medicine a company was organized for the establishment of an American College of Rehabilitation for training workers in the field of reconstruction of the wounded and crippled. The sponsors are Dr. Fred H. Albee, Mrs. Clarence Cary, Martin A. Metzner, W. J. Hoggson, R. Gradwell and Standish Chard.

Acceptance of Rebates by Physicians Condemned.—Resolutions were passed by the New York Academy of Medicine at a stated meeting held, February 15, setting forth that numerous instances had been brought to the attention of the Council and the Public Health Committee of the Academy of rebates being offered to, and accepted by, physicians from commercial laboratories, opticians, druggists and others to whom patients were referred. It was therefore resolved that "The New York Academy of Medicine condemns such practices on the part of those offering the rebates, as well as on the part of physicians accepting them, as being unethical and detrimental to the medical profession."

NORTH CAROLINA

Nurses' State Examining Board.—The Quickle bill, which would have amended the organization of the state nurses' examining board, providing for representations on the board by the state hospital association, and the state medical association as well as the nursing association, was defeated at Raleigh, February 7. Following a hearing before the house committee, the bill was killed by unanimous vote. Contention was made by the nurses, supported by the Buncombe County Medical Society and others, that by reducing their representation on the examining board, nursing standards in the state would be lowered.

OHIO

State Medical Board Elects.—At the regular quarterly meeting of the board in Columbus, January 2-3, the following officers were elected for the ensuing year: president, Dr. T. Addison McCann, Dayton; vice president, Dr. John K. Scudder, Cincinnati; treasurer, Dr. John H. J. Upham, Columbus, and secretary, Dr. Herbert M. Platter, Columbus.

Medical Board Upheld.—The right of the medical board to compel chiropractors to stop practicing unless they hold state licenses was affirmed by Common Pleas Judge Ahern, February 16, when he refused Herman J. Kroeger an injunction to restrain the state board from further interference with chiropractors. Reports state that Kroeger, a chiropractic patient, filed petition in the common pleas court to enjoin the state medical board from interfering with members of the chiropractic profession.

Society News.—A banquet in celebration of the fiftieth anniversary of the organization of the Mahoning County Medical Society was held at the Country Club, Youngstown, February 1. Dr. Charles D. Humes, Indianapolis, read a paper on "Traumatic Neuroses." Dr. Timothy Woodbridge was the first president, and Dr. William J. Whelan, the first secretary, of the society.——At a meeting, March 6, of the Summit County Medical Society at Akron, Mr. O. N. Harter, president of the Ohio Milk Distributors' Association, will give an address on "The Relation of the Milkman to the Medical Profession," and C. H. Case, a veterinary surgeon, will speak on "Tuberculosis in Cattle."

Personal.—Drs. Alfred G. Farmer and Jesse Grant Marthens were elected president and secretary, respectively, of the Dayton Academy of Medicine, January 12.——Prof. R. G. Hoskins, head of the department of physiology, Ohio State University College of Medicine, Columbus, has returned from a lecture tour on the Pacific coast.——Dr. Walter D. Hancock, Millville, aged 75, having retired after fifty years of medical practice, has gone on a three months' trip to South America. ——Dr. James F. Baldwin, ex-president of the state medical society (1922) and formerly professor of surgery, Starling Medical College, Columbus, spoke on "Some Great Charlatans of History" before the Wayne County Medical Society at Detroit, February 19.——Dr. Paul W. Bailey, an ambulance surgeon of the General Hospital, Cincinnati, was seriously injured, January 31, when his ambulance collided with an automobile.——Dr. A. B. Denison, assistant superintendent

of the Lakeside Hospital, Cleveland, has been appointed superintendent to succeed Dr. Robert H. Bishop, Jr., who has been appointed secretary of the University Medical School group.

PENNSYLVANIA

Philadelphia

Library Committee Issues Report.—The library committee of the College of Physicians has issued its report for 1922. At this time, the library contains 136,489 volumes, 14,677 theses and 131,866 unbound pamphlets. During the year, 6,430 volumes, 11,418 pamphlets and 16,016 periodicals were received. The library has 10,505 portraits and 336 incunabula. It was used during the year by 8,296 persons.

Society News.—At the annual meeting of the Philadelphia Pediatric Society, Dr. Horace H. Jenks was elected president; Dr. A. Graeme Mitchell, vice president, and Dr. John P. Scott, secretary.——Drs. John H. Jopson and John S. Rodman were elected president and secretary, respectively, of the Philadelphia Academy of Surgery at the annual meeting, recently.——Dr. William H. Carpenter was elected president of the Medical Examiners' Association of Philadelphia for the ensuing year.

University Day.—Four hundred students of the University of Pennsylvania, members of the faculty and trustees, celebrated, February 22, the ninety-eighth annual "University Day," exercises in the Academy of Music. The meeting not only commemorated the birthday of Washington, who was a patron of the university, but was the occasion for conferring honorary degrees. The degree of doctor of science was conferred on Dr. Chevalier Jackson of the graduate school of the university.

Site for College of Pharmacy Dedicated.—The site at Woodland Avenue and Forty-Second Street, Philadelphia, for the new buildings of the Philadelphia College of Pharmacy and Science, was dedicated, February 23. Rear Admiral Braisted, former Surgeon-General of the Navy and president of the college, delivered the dedicatory address. It was announced that more than $1,000,000 had been collected since last November in the campaign for $2,000,000 for the erection of buildings. The college was founded by Benjamin Franklin.

SOUTH CAROLINA

Narcotic Bill Killed.—State control of the sale of narcotics and other habit forming drugs was rejected by the house of representatives, February 7, when the Lewis bill, which would limit the sale of such preparations to licensed druggists, physicians, veterinary surgeons, trained nurses, dentists and hospitals, was killed.

SOUTH DAKOTA

Eyesight Conservation Campaign.—The South Dakota State Medical Association is conducting a campaign throughout the state for the dissemination of information to the public on the care of the eyes. The state society is voluntarily paying for this work from its own funds, and Dr. Joseph G. Parson, Sioux Falls, chairman of the committee on conservation of vision for the state medical society, has been giving illustrated lectures on the care of the eyes to the various schools and college clubs in Sioux Falls and other towns.

VIRGINIA

Public Health Work in Virginia.—At the annual conference of public health workers at Richmond in December, the progress of county health work in the state was outlined. In 1908 the state had no full-time county health workers; in 1912 the first full-time health officer went on duty; in 1917 five counties had full-time health officers, and in 1922 thirty-two counties employed full-time health workers.

PHILIPPINE ISLANDS

Physicians Elected to the Philippine Legislature.—Dr. Tomas Gomez was elected a member of the senate, and Drs. Agapito Buenconsejo, Raymundo Camacho, Eliseo Limsiaco and Vicente E. Manapat were elected to the house of representatives.

Lecture on Medical History.—Lieut. Col. F. H. Garrison, Washington, D. C., U. S. Army Medical Department Research Board, gave a series of six lectures on the history of medicine before the faculty and student body of the College of Medicine and Surgery of the University of the Philippines, Manila, recently.

Social Hygiene Association.—The Philippine Island Social Hygiene Association applied for charter, January 1. The educational and religious leaders of Manila formed this organization to study and better social hygiene conditions in the islands. Activities already under way include a survey of vice conditions in Manila and its environs and of the sex educational literature used in the normal schools and colleges.

CANADA

Hospital News.—The Hospitalieres Sisters, who have been conducting the Hotel Dieu in Quebec since the first days of the colony, will take charge of the new hospital to be erected on Ste. Foye Road. The new institution will be a general hospital.

Canada Asks United States to Help in Drug Fight.—Canadian officials of the dominion narcotics department will ask cooperation of the United States, it is stated, in a campaign against the international drug traffic. These officials will visit Washington to formulate some international plan. There are 15,000 known drug addicts in Canada, and evidence of the existence of an international "dope ring," with headquarters in Montreal and with operatives working in Chicago and New York, has been discovered.

Personal.—Prof. J. C. McLennan, professor of physics at the University of Toronto, has been granted leave of absence for the remainder of the school year. He will visit laboratories in Great Britain, France and Holland, and return in September.——Drs. Duncan N. MacLennan and William Lowry have been appointed assistant professors in ophthalmology in the University of Toronto.——Dr. Herbert A. Bruce, Toronto, addressed the Wayne County Medical Society, at Detroit, February 26, on "Some Observations on the Diseases of the Gallbladder and Pancreas."

Epidemic Encephalitis in Winnipeg.—Newspapers have carried exaggerated accounts of an epidemic of encephalitis said to have occurred in Winnipeg. THE JOURNAL, in order to present the facts, telegraphed to Dr. A. J. Douglas, health officer of Winnipeg, who replies: "The first case of encephalitis was notified January 12, and since then eighty-five cases have been reported. Eight of these came in from rural points. There have been seventeen deaths with the myoclonic form predominating. There seems to be no discoverable connection between any of the cases. During the past ten days the number of cases has been decreasing and the type is milder.

GENERAL

Postmaster General Work to Interior Department.—It is announced that on March 4, Postmaster General Hubert Work, former president of the American Medical Association, will become Secretary of the Interior in the cabinet of President Harding, being succeeded by Senator New of Indiana as Postmaster General.

Bill to Prohibit Interstate Commerce in Heroin.—Interstate commerce in heroin (diacetylmorphin) is prohibited in a bill introduced in the Senate by Senator Ladd. Persons violating the proposed law shall be fined not less than $1,000 or sentenced to one year's imprisonment. The measure was referred to the Committee on Interstate Commerce of the Senate.

Sioux Valley Eye and Ear Academy.—At the tenth annual meeting of the academy in Sioux City, January 24, the following officers were elected for the ensuing year: president, Dr. Jesse B. Naftzger, Sioux City, Iowa; vice president, Dr. Samuel A. Keller, Sioux Falls, S. D., and secretary, Dr. Lorenzo N. Grosvenor, Huron, S. D. The next meeting will be held at Omaha.

Large Fund for Oriental Colleges.—A campaign was opened in December in the United States to raise funds for the medical schools for women in India, China and Japan, which, if secured before January 1, would insure a gift of $500,000 from John D. Rockefeller. Dr. Tehyi Hsieh, Dr. Ida Scudder, principal of the Women's Medical College, Vellore, India, and Dr. Mabel M. Manderson, former dean of the North China Medical College for Women, Peking, toured the United States lecturing for this movement. It was announced recently by the Woman's Foreign Missionary Society of the Methodist Episcopal Church that more than $2,800,000 had been raised for the six oriental colleges for women.

Eye Sight Conservation Council of America.—The annual meeting of the council was held in New York, February 6,

at the Pennsylvania Hotel, under the presidency of L. W. Wallace, Washington, D. C. General Director Guy A. Henry presented the annual report, stating that more than 533,000 folders and pamphlets had been sent out during the year. Prof. F. C. Caldwell, Ohio State University, delivered an address on "Glare," and Dr. Homer E. Smith, New York, spoke on "The Marvels of Vision." The same officers were elected for the ensuing year, with the exception of the vice president. Bailey B. Burritt, New York, was elected to succeed Dr. Cassius D. Wescott of Chicago.

Reunion of "The Blizzard Class."—The class of 1888 of Bellevue Hospital Medical College, New York, will celebrate its thirty-fifth anniversary, March 12. Because of its graduation on the day of the most terrible blizzard New York ever experienced, the class was named by the late Professor Doremus "The Blizzard Class." Dr. D. Hunter McAlpin, the class president, has invited all the surviving members to be his guests at a dinner at the McAlpin Hotel on that date. Those of the class who have not been reached by direct invitation because of faulty or insufficient address will please communicate with the acting secretary, Dr. S. Adolphus Knopf, 16 West Ninety-Fifth Street, New York.

Resolutions on Narcotics Favorably Reported.—Feb. 23, 1923, the Committee on Foreign Affairs, after hearings, reported favorably the Porter resolutions on narcotics (THE JOURNAL, February 17, p. 488) to the House of Representatives. The report of the committee states, in part, that "notwithstanding that many nations have antinarcotic laws which impose heavy penalties for violation thereof, unlawful traffic in habit-forming narcotic drugs continues. In the United States, although our laws are designed to suppress illicit handling of these drugs, their use by addicts is constantly growing, and we are justified in the conclusion that radical and efficacious remedial action must be inaugurated and strictly enforced."

Rockefeller Foundation Announcements.—The Rockefeller Foundation has elected to its board of trustees Dr. Ray Lyman Wilbur, president of Stanford University, California, and William Allen White, editor, Emporia, Kan., and to membership on the International Health Board, Dr. David L. Edsall, dean of Harvard Medical School.——The foundation has authorized a system of fellowships in the biologic sciences, comparable to those now administered by the National Research Council, under foundation funds, in physics and chemistry and in the medical sciences.——Leave of absence has been granted to President George Vincent to enable him to go as a delegate of the United States to the Fifth Pan-American Congress, Santiago, Chile, during March and April. During his absence, the secretary, E. R. Embree, will perform the functions of president.

Bequests and Donations.—The following bequests and donations have recently been announced:

Sisters of Charity, Richmond, Va., on the death of his widow, half of the $6,000,000 estate of Major James H. Dooley, for the endowment of a hospital, and two orphanages for girls.

Reid Memorial Hospital, Richmond, Ind., $100,000, by Daniel G. Reid of New York. Of this sum, $50,000 is given outright, contingent on the city raising a like sum, for the purpose of enlarging the institution.

Portsmouth Hospital, Portsmouth, N. H., $100,000 for the treatment of tuberculosis and for a contagious ward, by the will of Mrs. M. Jenness DeGarmendia, who died in Paris, France, January 9.

Nyack (N. Y.) Hospital, $90,000, on the death of the beneficiaries, under the will of W. B. Conrad.

Norwood (Mass.) Hospital, $60,000, in memory of her husband, by the will of Mrs. Alice H. Plimpton.

Norwich (N. Y.) Hospital, the greater part of a $50,000 estate, under the will of Emery S. Reynolds.

Flushing (L. I.) Hospital, $25,000, by the will of Mrs. A. M. Booth.

Rockingham Memorial Hospital, Harrisonburg, Va., $10,000, by the will of Miss Clara Chaunceauline.

Roxbury (Mass.) Home for Aged Couples, $5,000, and, after private bequests, the residue of the estate in equal shares to the Boston Floating Hospital, the Florence Crittenton League of Compassion, the Massachusetts Society for the Prevention of Cruelty to Children, the Industrial School for Crippled and Deformed Children, the Boston Nursery for Blind Babies, the Perkins Institution for the Blind, the Frances E. Willard Settlement and the Episcopal City Mission, by the will of Elizabeth Goldthwait Pierce of Newton, Mass. In each instance, a permanent fund, to be known as the "John Goldthwait Fund," is to be established, in memory of Mrs. Pierce's father.

St. Francis Hospital, Santa Barbara, Calif., $5,000 by G. O. Knapp; $1,000 anonymously, and $500 by Mrs. Milton Robbins.

Barrett Hospital, Dillon, Mont., a 7½ acre site valued at $2,000 by the State Bank of Dillon, and a large sum by Mrs. William Roe.

Chelsea (Mass.) Memorial Hospital and the Chelsea Day Nursery, each $1,000, under the will of Edwin R. Hoag.

Beth Israel Hospital, New York, $1,000, by the will of Israel W. Schenker.

Institute for Tuberculosis, Denver, and the Institute Maer Bell Hanes at Jerusalem, Palestine, each $200, under the will of Dr. Adolph Harskovitz of Uniontown, Pa.

City Memorial Hospital, Winston-Salem, N. C., radium for the treatment of patients, by Bowman Gray of Winston-Salem.

LATIN AMERICA

New Argentine Hospitals.—A new tuberculosis hospital was recently opened at Córdoba.——Work has already begun on the new hospital at Miramar.

Funds for Brazilian Hospitals.—An annual appropriation of 6,000 contos (more than $700,000) was recently approved by the Brazilian Congress for maintenance of hospitals at Rio Janeiro. Repair and reequipment of several hospitals are already under way.

Cuban Society Elects Officers.—The Villaclara Medical Society elected recently the following officers: president, Dr. Olivio Lubián; vice president, Dr. Tomás A. Etchandy; treasurer, Ramón Lorenzo; secretary, Oscar Esparza. Dr. Lubián, the president-elect, is also the editor of *Villaclara Médica.*

Mexican Welfare Society.—This society has charge of funds in the federal district and twenty-two out of the twenty-eight states amounting to about 65,000,000 pesos. The income from these funds is used to support twenty-six homes, six foundling homes, three dispensaries, five old people's homes, ten schools, seventy-one hospitals, four insane asylums and fifty other institutions. The number of inmates is 15,698.

Yearbook of a Child Welfare Association.—El Patronato Oficial de la Infancia of Chile has published a most elaborate 250 page yearbook for 1923, reviewing its activities. Funds available in the fiscal year 1922 amounted to more than 613,000 pesos, and about 555,000 pesos was spent. The society supports eleven milk stations, a home for mothers, an infant clothing shop and a diet kitchen, and will support a maternity home (in construction). It has a capital of more than 1,400,000 pesos. The yearbook is a complete record as well as an entertaining volume. Besides descriptions, illustrations and personnel of all the hospitals and dispensaries at Santiago, the book contains material of general interest.

FOREIGN

International Congress on Comparative Pathology.—Our foreign exchanges state that the second International Congress on Comparative Pathology is now definitely announced to meet at Rome, Oct. 7 to 14, 1923. Seventy communications have already been listed. Prof. E. Perroncito, 40 Corso Valentino, Turin, is in charge.

Federation of Scientific Societies in Belgium.—The *Liége médical* relates that delegates from all the chemical, medical, mathematical and other scientific societies of Belgium recently convened at Brussels. The president of the federation is Professor Stockis of Liége, and the secretary is Dr. Renaux of the Pasteur Institute of Brussels.

Appeal for Candidates for Fellowships.—The *Nederlandsch Tijdschrift* publishes an appeal for candidates for the fellowships offered by the scientific committee of the Netherlands-America Foundation. Netherlands university students or recent graduates who may wish to study for a year or less in the United States are asked to present their credentials to Prof. H. A. Brouwer at Delft. The number of scholarships is small.

The League Against Syphilis.—The first meeting of the international league against social disease was held in Paris, February 25, under the presidency of M. Barthou. The queen of Belgium, founder of the league, was represented by the Belgian ambassador. A world-wide campaign will be conducted against venereal disease in the near future, it was announced. The official title of the organization is the League Against Syphilis.

Importation of Foreign Drugs Into Roumania Regulated.—A recent order issued by the ministry of public welfare forbids the importation and sale of foreign drugs in Roumania except under the following conditions:

The manufacturers must apply in writing for a license and state the value, quality and quantity of their drugs.

Chemical analysis of the drug must be performed by a competent analyst, whose certificate must be attached to the letter of application, together with an official certificate to show that the sale of the drug is permitted in the country of its origin.

Every package must be labeled in Roumanian with the name and formula of the preparation, and each application must be accompanied by ten samples of the drug.

Multiple Sclerosis in Switzerland.—The neurologists of Switzerland, who have long been impressed with the prevalence of multiple sclerosis in that country, have induced the public health authorities to aid them in a collective inquiry on the subject. Questionnaires are to be sent to all practitioners of medicine for information as to the prevalence of

the various types of the disease, but especially the type suggesting spastic spinal paralysis, which is the most common form in Switzerland.

No Reciprocity Between Hungary and Roumania.—Roumania announced in 1922 that Hungarian medical diplomas would not be acknowledged in Roumanian territory, as a reprisal, for Hungary's long standing failure to recognize diplomas from the universities of Roumania. This has seriously affected hundreds of students in the newly acquired parts of Roumania. In the University of Cluj, where formerly the Hungarian language was used, the Roumanian language has been adopted. The advanced medical students, who could not learn Roumanian and carry on their studies at the same time, went to the University of Budapest to finish their education and obtain their medical diplomas. Now, on returning to their homes, they find themselves prohibited from practicing, although their own language is still spoken in Transylvania, where even the Hungarian laws are still in force.

Russia's Biologic Crisis.—In his report on "Epidemics in Russia Since 1912," Professor Tarassevich states that Russia will be fortunate if she emerges from the present crisis with the loss of only 20 per cent. of her population. The crisis is described as not only political and economic but also biologic, because of the disturbances which it has caused in the domain of human physiology and pathology. Not only are epidemic diseases, such as typhus, relapsing fever, intestinal infection, malaria and scurvy, which have always existed in Russia, aggravated both in prevalence and in virulence, but nearly all other epidemic infectious diseases have been greatly increased, hitherto unknown diseases have been observed, and there has been an extension of many noncontagious diseases, such as disorders of the nervous system and the heart, and general functional disorders. Behind all this stands the famine, which has caused millions of deaths, and has lowered the stamina and physical standards of the whole Russian race.

Personal.—Dr. Pasteur Vallery-Radot, grandson of Louis Pasteur, gave a lecture before the Royal Society, London, February 2, in connection with the Pasteur centenary. Dr. Vallery-Radot is touring England in commemoration of the centenary, under the supervision of the Alliance Française. ——By resolution of the Royal College of Physicians, London, the name of Dr. David A. C. Pearce has been expunged from the list of licentiates.——Prof. Grafton E. Smith delivered the Montgomery Lecture before the Royal College of Surgeons of Ireland, January 29.——Dr. Leon Bernard of the University of Paris, secretary of the National Antituberculosis Association of France, arrived in America recently, to study American health methods. —— Prof. Camillo Golgi has been given an honorary degree by the Paris medical faculty.——Prof. T. Weiss was recently presented with a souvenir tablet on the occasion of his retirement from the chair of clinical surgery at Nancy, having reached the age limit.——Dr. F. Ingerslev of Saxkøbing, Denmark, has been elected to membership in the Union internationale contre la tuberculose.——The Academia de Medicina at Madrid recently unveiled a tablet bearing a tribute to the efforts and long service of the librarian, Dr. Fernández Caro, senator and president of the Spanish Hygiene Society.——An album with more than 1,800 signatures was presented to Professor Recasens of Madrid, with an address expressing gratitude for his work as dean of the medical school. He is credited with having initiated the interchange of university professors and numerous improvements in technical equipment.——The *Medicina Ibera* relates that the city authorities of Zaragoza presented Dr. Martinez Vargas with a gold medal. He is professor of pediatrics at Barcelona, and a leader in welfare work for children.——Dr. Sieur, the medical inspector general of the French army and president of the medical consulting staff in the ministry of war, was given an ovation recently as he left the service, having reached the retiring age. Vincent is his successor.

Deaths in Other Countries

Dr. **James Ritchie,** Irvine professor of bacteriology at the University of Edinburgh, January 28.——Dr. **Thomas Wood** of Edinburgh, at Lisbon, Portugal, January 24.——Dr. **J. W. Ballantyne,** lecturer on midwifery and gynecology to the School of Medicine for Women, Edinburgh, past president of the Edinburgh Obstetrical Society, fellow of the American Association of Obstetricians and Gynecologists and honorary member of the American Child Hygiene Association.——Dr. **Thomas Higgins** was assassinated at his home at Maryborough, Ireland, February 12.——**Dr. Oscar Freire,** professor of legal medicine at Bahia, who has been giving a course of lectures in the S. Paulo medical school, died recently at S. Paulo, aged 42. He was the founder of the Sociedade de Medicina Legal at Bahia and a frequent contributor to scientific literature.——Dr. **F. La Torre,** professor emeritus of obstetrics at the University of Rome, author of several textbooks, founder and director for twenty-five years, of the *Clinica Ostetrica,* aged 76.——Dr. **A. Testaz** of Bex, Switzerland, aged 64.——Dr. **A. Roskam** of Liége, president of the Société médico-chirurgicale, and author of works on internal medicine and neurology.——Dr. **Isidro Giol de Diego,** at Madrid.——Dr. **Ernesto B. Salvá** of Santa Fe, Argentina, aged 58.——Dr. **V. Chirivino,** instructor in skin diseases and syphilis at the University of Naples, and a frequent contributor to the literature of these specialties, aged 53.

CORRECTION

Expansion of New York Academy of Medicine.—Dr. W. G. Thompson writes that the announcement made in a recent issue of THE JOURNAL under the heading "Expansion of Academy of Medicine" should be corrected to read as follows: "The Rockefeller Foundation has not contributed $1,000,000 for the new building, but has given approximately that sum toward maintenance of the academy and expansion of its educational work. The Carnegie Corporation has contributed the cost of the new building to the extent of $1,000,000. Thus the academy of medicine furnishes the land, the Carnegie Corporation the building, and the Rockefeller Foundation the endowment.

Government Services

Aviation Examining Units Authorized

Pursuant to instructions of the Secretary of War, the organization of the following aviation physical examining units, organized reserves, has been authorized: Aviation Physical Examining Unit No. 6 (a New Jersey state unit); No. 7 (Tennessee), No. 10 (Iowa), No. 14 (Tennessee), No. 15 (Pennsylvania), No. 2 (California) and No. 5 (California).

Survey Vessels to Have Medical Officers

The House of Representatives acted favorably, February 19, on the bill providing medical and hospital supplies for the officers and seamen of the Coast and Geodetic Survey. By the terms of the bill, the U. S. Public Health Service is authorized to detail a medical officer on each of the vessels of the survey while at sea. The bill passed without a record vote, and went to the Senate.

First Class in Physiotherapy Graduates

The first class in physiotherapy at Walter Reed General Hospital, Washington, D. C., was graduated, February 7. Dr. Frank B. Granger, lieutenant colonel, M. O. R. C., Boston, spoke on the development of physiotherapy, emphasizing the effect the World War had in placing physiotherapy on a scientific basis. Surg. Gen. Merritte W. Ireland presented the certificates of proficiency. The graduates, with a single exception, have accepted appointments as reconstruction aides in U. S. Army hospitals.

Director of Veterans' Bureau Appointed

The President has nominated Brig. Gen. Frank T. Hines, U. S. Army, retired, Washington, D. C., director of the U. S. Veterans' Bureau, succeeding Col. Charles R. Forbes, who resigned recently. Brigadier General Hines was chief of the transportation service during the World War.

Additional Appropriation for Disabled Veterans

Representative Langley of Kentucky, chairman of the House Committee on Public Buildings and Grounds, announced this week that an additional $5,000,000 would be necessary to provide adequate hospital facilities for dis-

abled war veterans. This statement was made after Chairman Langley had conferred with President Harding on the subject. The proposed $5,000,000 appropriation is in addition to the $17,000,000 recently carried in the so-called second Langley bill, which has already been expended or authorized to be expended for hospitals now under construction. An urgent need for more money exists, according to Congressman Langley, who indicated that the President had given his sanction to whatever additional appropriations are necessary.

Foreign Letters

PARIS

(From Our Regular Correspondent)

Feb. 2, 1923.

To What Extent the Sending of Pamphlets May Constitute Illegal Practice of Medicine

A Lyons herbalist became the proprietress of a botanical laboratory in which the medicinal decoctions (tisanes) of an abbé were manufactured. She solicited clients by means of circulars and advertisements in the public press, in which she advised patients suffering from any one of twenty diseases enumerated to begin the use, if they wished to recover, of the medicinal decoctions recommended in a pamphlet, giving twenty modes of treatment, of which the abbé was the author and which was furnished gratis to all persons requesting it. In response to letters, the herbalist sent out an advertising pamphlet, the cover of which bore a picture of the abbé, and the preface of which was signed by him as evidence of his endorsement. The results of a therapeutic method which consisted in the use of the medicinal decoctions of the abbé were set forth with extravagant praise. The cost of the various modes of treatment was plainly stated, and the treatment that should be followed in each type of disease was specified.

The profits realized from the sale of these medicinal decoctions amounted to about 150,000 francs a year. The abbé, who was not a doctor of medicine, had granted to the herbalist, in return for the payment of certain sums monthly, the right to use his name and also to prepare and sell the medicinal products that were manufactured according to his formulas. It was likewise with his authorization that the pamphlet had been edited, published and distributed. When the charge of practicing medicine illegally was brought against them, the abbé and the herbalist set up in their defense the facts that they had made no examination of their patients, and that no written prescription had been given in connection with the application of the appropriate treatment. The court of cassation (the highest court of France) refused to accept this interpretation of their acts, and set forth that the law does not state that examination of the patient and the mode of writing used in prescribing treatment are the pivotal considerations in respect to the charge of practicing medicine illegally. This court decided that a misdemeanor had been committed, since, with the foreknowledge of the abbé, the herbalist gave instructions to patients and participated habitually in the treatment of their diseases. While it is true that advice given in a general way, in a book or pamphlet, in regard to the care to be accorded patients, does not constitute in itself illegal practice of medicine, the case is different when certain care and treatment are prescribed for a patient individually and in a specific instance. The circumstance that made it possible for the court to uphold the charge that a misdemeanor existed is the fact that personal letters were addressed to the patients, in which the cost of treatment was stated and in which the treatment to be observed was specified.

Photogenic Properties of Cocain

Dr. G. Salles calls attention to a cause of cocainomania, which does not seem to have been pointed out heretofore; namely, the use of cocain by motion picture actors to increase the photogenic capacity of the eyes. The resulting increase of ocular tension and the dilatation of the pupil give to the eyes and to the face of the artist an expression of astonishment, depth and brilliance, and sometimes of wildness. It goes without saying that this use of cocain, instead of enhancing the gifts of the actor, soon develops a mania, and induces degradation of character and the loss of the fundamental qualities of an artist.

Voice of Opposition Against Secret Remedies

The Société de thérapeutique adopted recently the following resolution:

The Société de thérapeutique cannot preserve its character as a great scientific society unless it refuses to act in any way that seems to accord its patronage to private interests. Consequently, it has decided to return to the practice adopted previous to 1914, and henceforth it will not accept from its members, nor allow its members to present, any communications that deal with therapeutic products the chemical formula of which is unknown, or, in the case of galenicals, if the quantitative formula is not made public.

Protection of the Professional Reputation of a Physician

Suit was recently brought against an oculist of Dijon by the father of one of his patients to collect 100,000 francs damages for a grievous error, alleged to have been committed by the oculist, which resulted in the enucleation of the patient's eye. The medical experts, in their testimony, declared that there was no evidence that the oculist had neglected the dictates of common sense, but that, on the contrary, his actions were in conformity not only with prudence but also with the guiding principles of science: both as regards the establishment of the diagnosis and the application of treatment he had adopted a line of conduct that was absolutely normal and in accord with recognized medical standards. In view of this testimony, the plaintiff expressed a willingness to withdraw his complaint, but the oculist set up a cross-action against the plaintiff and demanded an award in his own favor. The court of Dijon approved the oculist's claim, and required his opponent to pay the physician, by way of damaged interests, the sum that he had demanded. The decision of the court was based on evidence that the plaintiff in the primary action had not confined his charges to the imputation that the physician was guilty of a characteristic professional error, but, without necessity, he had accused the defendant of "having carried out the examination of the patient with haste and an unjustifiable precipitation, of having committed a grave error, and of having been guilty of gross negligence, such as would constitute, aside from all questions of medical theory and method, evident incapacity and neglect of the rules of sound reasoning and prudence such as any ordinary human being is supposed to apply." The court regarded these affirmations as a malicious endeavor to injure the physician's reputation. To be sure, the law permits one to injure the reputation of others if it is done in the exercise of one's own individual rights. A patient is entitled to bring complaint against his physician; but, in defaming him without necessity, he exceeds his rights. The rights of the patient cease where the rights of the physician begin. The physician, too, is entitled to protection against imputations of such a nature as will reflect on his character as a professional man and will be certain to awaken a prejudice against him.

Propaganda for Remedies Against Tuberculosis

All physicians of Paris, and doubtless also those in the provinces, received recently a bulky package on which was inscribed in large letters: "The Fight Against Tuberculosis." Great was their disappointment when, on opening the package, they found only a stock of pamphlets vaunting the treatment

of tuberculosis with endotine, the "Gabrilovitch purified tuberculin," which, according to these brochures, was a "veritable specific remedy against tuberculosis." But what was more serious, in a daily paper there appeared a long article entitled, "A Light in the Darkness, Determining the Direction of the Fight Against Tuberculosis." This extolled the great merits of the Gabrilovitch tuberculin and tended to make the general public believe that this tuberculin is "at last a truly therapeutic and a truly specific remedy" against tuberculosis. And how could the general public refuse to believe these affirmations when there appeared, under the article in question, the signature of Prof. Gabriel Petit, of the Academy of Medicine. The public does not know that Gabriel Petit is a professor in a school of veterinary medicine.

MADRID

(From Our Regular Correspondent)

Jan. 18, 1923.

Epidemic Infantile Paralysis in Madrid Province

Dr. Lafora has published an article on an epidemic of infantile paralysis occurring not far from Madrid. So far no epidemics had been reported in Spain, although some small outbreaks, such as the one reported by Dr. Fernández Sanz at Manzanares, Ciudad Real, in the summer of 1917, had attracted attention. The outbreak now described is worthy of notice both because of its being so near Madrid and because of its continuing to spread. It began about three weeks ago among the children in Chinchón. Dr. Lafora has seen three cases personally, and has heard of six new cases in the last few days. No deaths have been reported, but the paralysis has persisted over twenty days in a number of cases. Dr. Lafora's article contains a brief account of the disease, symptoms and treatment, including Rosenow's advice as to the administration of immune horse serum. The authorities have heeded Dr. Lafora's report, and have adopted measures to prevent the spread of the disease.

Dr. Madinaveitia's Death

Dr. José Madinaveitia, noted for his constant efforts on behalf of labor, died recently, at Bilbao, his home town. He lost his immense practice in the Basque provinces on deserting the Basque nationalist party for international socialism. Even his own people repudiated him. He then closed his office and devoted his science, his money and all his energies to a medicosocial campaign among workers. At Eibar, he created a garden for convalescents, changing a barren hill into an inviting resort, and organized libraries, lecture halls and cooperative societies. When the famous mining strike took place at Vizcaya, Madinaveitia immediately began making provision for the strikers' children, that the parents might better stand the conflict. He took whole trainloads of children to Bilbao. The strikers, however, showed him no gratitude for this action. When his efforts at political reform failed, he went back to his practice, as he also went back to his former church, when about to die.

Increase of Students and Decrease of Professors in Spanish Schools

Dr. Eleicegui, editor of *España Médica*, has published an article protesting against the alleged greed of professors in medical schools. The number of medical students, already too large, continues to increase, and the school rooms are overcrowded. In some classes, the enrolment exceeds 600 or 700, and, to aggravate the situation, the teaching personnel is diminishing. The professors, taking advantage of a law intended for other government employees and aiming to exclude professors from its operation, have devised what is called "la martingala" or combination of chairs. When a vacancy occurs, instead of appointing a new professor, one of the old incumbents is appointed, and he is thus entitled to receive a 50 per cent. salary increase for filling two chairs. Thus, through a false sense of economy, courses already inadequate through the lack of sufficient professors are poorly taught, as the one professor, who could not attend properly to one subject, attempts to present two.

The fault lies with the secretaries of education, who have shown lack of strength, in addition to favoritism, on such occasions. On the one hand, they have allowed their friends to occupy several chairs, so that they may collect several salaries; and, on the other hand, they have exempted students from compulsory attendance. There is no question that teaching in Spain has suffered a serious setback since examining boards have been discontinued and the passing marks left to the discretion of each professor. The result has been an enormous decrease in the number of failures, and a flood of brand new physicians pouring out every year. Thus, we are preparing a medical proletariat, really pitiable, because of both its incompetence and the hard struggle it must make to earn a living.

Neumann Discusses Tone and Rhythm

In an interesting lecture before the National Academy of Medicine, Neumann of Vienna recently discussed the physiologic relationship between the static and the acoustic portions of the internal ear, which, in his opinion, parallel the anatomic relationship. He tried to show that Ewald's muscular tonus property is under the influence of acoustic impressions. To prove it, he described rhythm and musical sensations in man, and explained through them why we derive different impressions on hearing music played either rapidly or slowly on an organ. The cause of both the psychic and the physical effect produced by music must be traced to the anatomic relation between the static and the acoustic labyrinth. There is as close a relationship between the nerves that traverse the two, as among their respective original nuclei. Tone, rhythm, harmony and melody were discussed by the lecturer. He charmed the audience with his description of how rhythm, by stirring the static labyrinth, favors muscular tonus. He recalled that even among the deaf, who receive only subjective sensations, muscular tonus is superior to that possessed by those who cannot hear any sound at all. The oldest musical instrument, the drum, according to Neumann, was originally just a mortar covered with skin, the rhythm of work fusing with the rhythm of music. At the beginning, music, song and dance were inseparable, their exciting influence being so marked that primitive races, and later savages, danced and sang to certain simple but rhythmic tunes exacting such muscular effort as to tire them out.

Spanish Universities Go on Strike

The Spanish universities have gone on a strike: an unprecedented event in Spain and perhaps in the whole world. The deans of the different faculties at meetings presided over by the university rectors decided to close the schools until the superior police chief resigned. Because of some disturbance created by the students, police forces were mobilized. The students from other schools invited their medical colleagues to join in the protests, but met with a refusal. It so happened that, at that very moment, through some blunder, the police charged the students, clearing out both those willing and those unwilling to attend school. On the next day, when a policeman passed the medical school in a street car, some students insulted him. The officer drew his revolver and wounded four students. On the ground that the policeman acted on orders from the chief of police, rectors, deans and professors decided to close the schools until the chief was dismissed. This happened three weeks afterward, when there was a change of administration and a new cabinet was appointed. The minister of education, who happened to be a

professor, struggling between his duty to enforce the law and his wish to stand with his school associates, solved the difficulty by extending the length of the course for as many days as the strike might continue.

BERLIN

(From Our Regular Correspondent)

Feb. 3, 1923.

Proposed Reforms in the Medical Curriculum

In 1918, a movement (to which I have frequently referred) was launched to bring about certain reforms in the medical curriculum in Germany. Through the transactions of the special commission appointed by the government, which met in Berlin the end of November, the movement has taken on a more tangible form and the problems have been brought nearer to a solution. The commission was composed of representatives of the medical faculties of the various German universities, the medical profession, medical students, medical societies and health insurance societies, together with delegates of the governments of the several states constituting the commonwealth. The results of the manifold deliberations of the commission may be summed up thus: The course of medical study shall be lengthened and shall comprise twelve semesters in place of ten. The *"praktische Jahr"* (the year devoted to the practical application of previously gained theoretical knowledge), which has been quite generally opposed by the medical faculties, is approved for continuance, since the majority of the representatives, in harmony with the views of all the representatives of the medical profession, held that the *praktische Jahr* afforded future medical practitioners the sole opportunity of developing independent initiative under conditions in which they were thrown on their own resources, a matter of great importance in the practical training of physicians. In further extension of the idea of practical training, it was definitely recommended that all medical students should serve for an uninterrupted period of six months as "famulus," or assistant. This period of assistantship must not interfere with clinical instruction. Considerable latitude should be left to the students as to the exact manner of satisfying this requirement, the sole restrictions being that the whole period of assistantship may not be served during vacations, and that it may not be served before the seventh semester of study. The period of assistantship shall be utilized for practical training in internal medicine, surgery, obstetrics, and gynecology in general. The *praktische Jahr* should follow the final medical examination. Training in internal medicine and in obstetrics is compulsory. The remainder of the *praktische Jahr*, however, shall be open to a wide range of choice; especially in view of the fact that many future medical practitioners intend to serve, for a time, in institutes devoted to scientific research, and likewise because there is a pressing demand from such institutes for more assistants. From one to two months of the time required for internal medicine may be spent on children's diseases. Only two examinations will be given, as heretofore, throughout the course: the premedical examination and the final medical examination at the end of university instruction. Five semesters of study shall precede the premedical examination, and the further requirement is set up that during the fifth semester certain propedeutic clinical subjects, such as pharmacology, general pathology or bacteriology, shall be studied, in preparation for the clinical subjects to follow. More thorough instruction in physiology seems eminently desirable, and a course in physiologic chemistry, including laboratory work, is recommended. A period of service, during the first semesters, as attendants on the sick, which was demanded from many quarters, was not approved, it being held that such training might better be reserved for the period of assistantship during the later semesters. The proposal to divide the final medical examination into two parts, one bearing more particularly on the natural sciences and the other on anatomy and physiology, was rejected by the commission. Training in the mounting of anatomic specimens shall, as heretofore, be given in two semesters, and the time devoted to the refinements of the subject shall be further restricted. The suggestion that botany and zoology be combined into a biologic lecture course and a test in biology was rejected. As heretofore, in a number of important clinical lecture courses attendance shall be compulsory, and evidence of attendance must be furnished. Evidence of attendance on courses in social medicine and in legal medicine and medical jurisprudence must also be secured. Lecture courses in pathologic physiology, psychology and social hygiene should be added to the medical curriculum. In the future, the premedical examination and likewise the final medical examination may be tried by candidates only twice, and the second test must be held before a collegiate body. The length of the final medical examination should be considerably shortened.

Now that the government commission has reported its recommendations, the preliminary work toward the revision of the medical curriculum would seem to have been accomplished. The next step in the procedure will be for the ministry of the interior, as the competent board of control in this case, to draft a bill giving consideration to the changes proposed by the commission, which will be acted upon in turn by the *Reichsrat* (council of the empire or commonwealth), in collaboration with the representatives of the several federated states.

Health Insurance

In the reichstag committee on social politics it was decided, January 18, to raise to 2,400,000 marks the fixed annual income below which all persons must secure health insurance in the health insurance societies. The health insurance societies of Berlin are so far in arrears in the payment of fees due to physicians that the fees for service rendered in October were paid only a few days ago. So far, the physicians have received only about 16 per cent. of their fees, and this occurs at a time when the sum received represents only a fraction of the buying power it had at the time the service was performed. It is stated that 440 million marks in fees due physicians are in arrears. It will be readily understood that, under such circumstances, many physicians state they have not the funds with which to buy the food their families need.

Establshment of Prussian Subdepartment of Physical Education

In the Prussian ministry of public instruction a new subdepartment of physical education has just been established. The Prussian ministry of public welfare has also created a subdepartment of juvenile welfare, including physical training. A council on juvenile welfare and juvenile welfare movements, including physical training, has been formed, with six special committees to deal with the various phases of the work.

Help for Tuberculous Children

Through the collection of a large sum of money in foreign countries, it has become possible to supply supplementary food to about 20,000 children who are either tuberculous themselves or are exposed to the disease through tuberculous members of the family. The selection of applicants and the distribution of food take place only through the municipal welfare station for the tuberculous, the Landesversicherungsanstalt of Berlin, and the welfare station for the tuberculous at the Charité Hospital. The administration of the welfare

work is in the hands of the *Hauptgesundheitsamt* (central public health office) and the *Jugendamt* (child welfare bureau) of the city of Berlin. In Norway a special fund has been raised for the purchase of cod liver oil, and the welfare stations for the tuberculous in Greater Berlin will soon be in a position to distribute this valuable gift.

PRAGUE

(From Our Regular Correspondent)

Feb. 1, 1923.

Pasteur Centenary

January 18, the official celebration of Pasteur's centennial anniversary took place in Prague at the Charles University. The ceremony was opened by the rector of the faculty, Prof. C. Horacek, and by the dean of the medical faculty, Prof. C. Weigner, in the old university hall. The senior of the medical faculty, Prof. J. Hlava, afterward gave a lecture on the importance of Pasteur's discoveries in the development of the medical sciences. He is one of the few Czech scientists still living who knew Pasteur personally. The lecture of Prof. I. Honl followed, on the doctrine of Sacharow, who tries to defend the theory of spontaneous generation sixty years after Pasteur's discoveries. The ceremony was attended by the minister of public health, the Reverend Dr. Sramek, the French ambassador, representatives of other states, members of all the university faculties, and many students.

Health Magazine for Czechoslovakia

The Czechoslovak Red Cross is now issuing a popular health magazine under the name *Nation's Health*, beginning with the year 1923. This magazine developed from the health leaflet which accompanied the *Red Cross Monthly News* and which enjoyed a considerable popularity. The magazine is of limited size and is sold at a low price in order to make it accessible to the largest possible circle of readers. The magazine will be published monthly, and is to be edited by Dr. C. Driml. It is intended primarily for the rural population. It is hoped that this magazine will at least partly satisfy the desire for public health education, which has become apparent in the country in the course of the last few years.

Rural Hygiene Demonstration

The rural hygiene demonstration that was started in Kvasice Moravia under the auspices of the ministry of health, with the financial assistance of the International Health Board of the Rockefeller Foundation, is already bearing fruit. The Czechoslovak Red Cross is about to start a similar demonstration at Lany, the residence of the president of the republic. This demonstration will be gradually extended to include the whole district of Slany, where the community is located. The demonstration in the district, which includes a population of about 50,000, will be supported by the national council of social hygiene, which is a federation of all important private health and social agencies in the republic. Both the ministry of health and the ministry of social welfare will be asked to concentrate their efforts on this district for some time. The district is located near Prague, and it is intended to use it as a place for field education of the public health and social personnel that is to be trained in the school of hygiene now under construction. The district is well suited for this purpose, because it contains industrial as well as purely rural sections.

Milk Supply of Prague

The division for study and reform of public health activities is undertaking a study of the milk supply for the city of Prague, under Dr. J. Jurena, who has recently returned to this country from his studies in the United States. The milk situation during the war was appalling, and control of the milk supply was virtually suspended because the city authorities were glad to see milk coming to Prague no matter how bad it was. During the two years that have elapsed since the close of the war, the supply of the city has again become normal, but the adulteration of the milk, to which the dealers had become accustomed, apparently continued. The two laboratories for the control of food inspected all the stores where milk was sold, in July, 1922, and found the milk adulterated in about three fourths of them. When inspections were made the second and third times, the number of cases in which the milk was found below the standards admitted by the food laboratory fell to 4 per cent. Nevertheless, the situation cannot be considered satisfactory, because the standards which the laboratory for food control recognizes are altogether too low. No bacteriologic examination of the milk is made, purely chemical analyses being depended on. The lowest percentage of fat that is accepted by the food laboratory is 2.8, which is undoubtedly too low. It is the purpose of the study now under way to determine the fat content of the milk as it is produced in the country, and to ascertain the hygienic conditions under which the milk is being produced and transported to the city. Bacteriologic control of the milk will be largely depended on in judging these conditions.

Examinations for Health Officers

The ministry of health is proceeding to the reorganization of the education of public health officers. Till now, all the medical men who served in the state health service have had to undergo an examination before a board nominated for this purpose by the minister of health. Two years of practice in a general hospital were required before the candidate was admitted to the examination. No regular courses were prescribed prior to the examination, but it became the custom for candidates to pass courses of three months' duration given at the university before they appeared before the examining board. The recent law on the nationalization of health services brought in many local health officers who were formerly accepted without the examination. All those who have been serving for less than five years will have to undergo this examination. The ministry intends to institute a regular course for the candidates of the state public health service in the institute of hygiene that is being built. This is being opposed by the medical faculties, which assert that they perform this function for them. The solution will probably be a compromise between the medical faculties and the institute of hygiene to the effect that some of the lectures in the course will be given by the university professors, and the rest by the members of the institute.

Marriages

LELAND GILLELAND HEDGES, Chicago, to Miss Ethelyn Blanche McMillan of Rochester, N. Y., January 10.

ROBERT HALL HARRINGTON to Miss Ruth Ione Hammond, both of Richmond, Va., December 23.

HENRY TAYLOR COMPTON to Miss Sarah Millburn Walthour, both of Savannah, Ga., January 24.

ERASTUS L. MILLER, Crossett, Ark., to Miss Fannie C. Spurlock of Lake Village, February 13.

WILLIAM HENRY WASHBURN to Mrs. Elizabeth D. Sherer, both of Milwaukee, February 3.

LEVER F. STEWART to MRS. Elizabeth Eyster, both of Clearfield, Pa., January 25.

FRED W. HARK, Iowa City, to DR. FLORENCE E. WHITE of Des Moines, recently.

ARTHUR E. BENCE to Miss Clara Beard, both of Iowa City, recently.

Deaths

Julius Parker Sedgwick ✠ professor of pediatrics and chief of the department of pediatrics at the University of Minnesota Medical School since 1915, and professor of pediatrics at the University of Minnesota Graduate School of Medicine, Minneapolis; died, February 25, at his home in Minneapolis, following a prolonged illness. Dr. Sedgwick was born in Wrightstown, Wis., in 1876. He received the degree of bachelor of science from the University of Nebraska in 1896 and of doctor of medicine from Rush Medical College, Chicago, in 1899. Following his graduation he served as intern at Alexian Brothers' Hospital, Chicago, and later was made assistant physician at the Fabiola Hospital, Eveleth, Minn. During the World War, Dr. Sedgwick was commissioned a major in the Medical Reserve Corps and served in France with the American Red Cross by which he was appointed to work out a health program for children and mothers who had lived in the war zone for three years. On his return to America in 1918 he was named consulting hygienist on pediatrics to the Surgeon General, U. S. Public Health Service. At the same time he also was engaged in an investigation of the relative merits of natural and artificial infant feeding in connection with clinical work at the University of Minnesota. Dr. Sedgwick was a member of the American Pediatric Society, the Chicago Pediatric Society and the Central States Pediatric Society. He was a contributor to American and European journals on diseases of children and recently edited a translation of Feer's "Text Book of Pediatrics."

George Albert Hayes Smith, Freeport, N. Y.; Long Island College Hospital, Brooklyn, 1898; member of the Medical Society of the State of New York; formerly assistant professor of diseases of the eye at his alma mater; at one time on the staff of the Brooklyn Eye and Ear Hospital, Brooklyn; aged 46; died, February 10, at the Post-Graduate Hospital, New York, from pneumonia, following an operation for biliary calculi.

Alfred Nathan Strouse ✠ New York; Medical Department of Columbia College, New York, 1885; member of the American Academy of Ophthalmology and Oto-Laryngology, and the New York Academy of Medicine; on the staff of the City Hospital and of the Asylum of St. Vincent de Paul; aged 59; died, February 12, following an operation for strangulated hernia.

Israel J. Desroches, Montreal, Que., Canada; University of Montreal Faculty of Medicine, Montreal, 1877; at one time president of the Medical Society of Montreal, and corresponding member of the Société des sciences physiques, naturelles et climatologiques d'Alger, and the Société francaise d'hygiene de Paris; died recently, aged 72.

Louis Henry Jacob ✠ Philadelphia; Medico-Chirurgical College of Philadelphia, 1901; member of the American Urological Association and the Philadelphia Genito-Urinary Society; on the staffs of the Jewish and Polyclinic hospitals; aged 43; died, January 8, from appendicitis.

Daniel Louis Humfreville, Pasadena, Calif.; Rush Medical College, Chicago, 1896; member of the Medical Society of the State of California; formerly professor of physiology at the Ensworth Medical College, St. Joseph, Mo.; aged 48; died, February 8, from heart disease.

Elmor E. Morris, New Haven, Ind.; Eclectic Medical Institute, Cincinnati, 1902; member of the Indiana State Medical Association; aged 54; was instantly killed, February 4, when the automobile in which he was driving was struck by an interurban car.

John Weldon, Willimantic, Conn.; New York University Medical College, New York, 1883; at one time member of the faculty of Fordham University, New York, and president of St. Joseph's Hospital; aged 64; died, February 18, from pneumonia.

Douglas Adair White, Syracuse, N. Y.; College of Physicians and Surgeons, Baltimore, 1887; member of the Medical Society of the State of New York; formerly superintendent of the Hospital of the Good Shepherd; aged 62; died, February 1.

Louis Nishawitz, Hackensack, N. J.; Long Island College Hospital, Brooklyn, 1922; intern at the Hackensack Hospital; aged 24; was instantly killed, February 16, when the ambulance in which he was riding was struck by a train.

Frank B. Morgan, Huntington, Ind.; Medical College of Indiana, Indianapolis, 1897; member of the Indiana State Medical Association; for fifteen years county coroner; aged 53; died suddenly, February 5, from heart disease.

Theodore Carroll Griest ✠ Put-in-Bay, Ohio; Starling-Ohio Medical College, Columbus, 1913; aged 33; was drowned, February 17, when the automobile in which he was driving fell through the ice on Lake Erie.

Henry Latimer Rudolph ✠ Gainesville, Ga.; University of Maryland School of Medicine, Baltimore, 1902; served in the M. C., U. S. Army, with the rank of captain; aged 43; died, January 28, from pneumonia.

Carl John Larson ✠ Negaunee, Mich.; University of Michigan Medical School, Ann Arbor, 1904; served in the M. C., U. S. Army, during the World War, with the rank of captain; aged 41; died, January 11, from uremia.

Cora B. Murdock Palmer ✠ Logansport, Ind.; University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1906; member of the American Psychiatric Association; aged 37; died, January 26, from pernicious anemia.

James R. Scott, Edgewood, Ill.; Cincinnati College of Medicine and Surgery, 1863; Civil War veteran; practitioner of Edgewood for more than half a century; aged 82; died, February 8, from senility.

Albert I. Lawbaugh ✠ Calumet, Mich.; Long Island College Hospital, Brooklyn, 1870; president of the Michigan State Medical Society, 1908-1909; aged 78; died, February 15, from carcinoma.

Thomas J. Kennedy, Coolidge, Ga.; Memphis Hospital Medical College, Memphis, Tenn., 1887; member of the Medical Association of Georgia; aged 60; died, February 8, from heart disease.

Oscar Von Barandy, South Bend, Ind.; University of Budapest, Hungary, 1900; member of the Indiana State Medical Association; aged 45; died, February 8, from cerebral hemorrhage.

George H. Wuchter, Wadsworth, Ohio; University of Pennsylvania School of Medicine, Philadelphia, 1880; veteran of the Spanish-American War; aged 63; died, February 3, of chronic nephritis.

George Snow Fortier, Chicago; College of Physicians and Surgeons, Chicago, 1907; member of the Illinois State Medical Society; aged 51; died, February 20, from pneumonia.

Alfred O. Strout, Parkersburg, Iowa; Chicago Medical College, Chicago, 1875; member of the Iowa State Medical Society; aged 73; died, February 13, from pneumonia.

William Henry Nusbaum, Indianapolis; Miami Medical College, Cincinnati, 1881; formerly state senator; aged 66; died, February 8, following a long illness.

Carl Frederick Bachmann, Neillsville, Wis.; Jefferson Medical College of Philadelphia, 1896; also a druggist; aged 48; died suddenly, February 2.

Wilfrid Henry Chevrette, Holyoke, Mass.; University of Montreal Faculty of Medicine, Montreal, Que., Canada, 1903; aged 44; died, January 26.

Cassius W. Gould, Chicago; University of Buffalo (N. Y.) Department of Medicine, 1872; aged 72; died, February 20, from pneumonia.

Joseph Oliver Balcar ✠ West Franklin, Ill.; Rush Medical College, Chicago, 1918; aged 30; died, February 12, from appendicitis.

Thomas J. Shuell ✠ Cedar Rapids, Iowa; State University of Iowa College of Medicine, Iowa City, 1880; aged 69; died, February 15.

A. Minnie Russell, Speer, Ill.; Woman's Medical College of Baltimore, 1896; aged 58; died, February 6, from pneumonia.

Leota S. Cunningham, Tulsa, Okla.; Hahnemann Medical College and Hospital of Chicago, 1907; aged 48; died, February 7.

William Eben Ireland ✠ Washington C. H., Ohio; Starling Medical College, Columbus, 1882; aged 70; died, February 8.

Charles Summer Judy ✠ Miamisburg, Ohio; Medical College of Ohio, Cincinnati, 1887; aged 61; died, February 5.

Franklin Pierce Tyler, Galesburg, Ill.; Rush Medical College, Chicago, 1885; aged 68; died, February 7.

✠ Indicates "Fellow" of the American Medical Association.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

MORE MISBRANDED NOSTRUMS

Abstracts of Recent Notices of Judgment Issued by the Bureau of Chemistry of the United States Department of Agriculture

Vita Oil.—Loring J. Barker of Berkeley, Calif., who did business as the Vita Oil Co., shipped in August, 1917, a quantity of this product from California to Indiana which was misbranded. The Bureau of Chemistry analyzed this preparation and reported that it consisted essentially of nonvolatile vegetable oil, mineral oil and volatile oils, including turpentine, clove, and cinnamon oils with extractives of red pepper and pepper. The product, which was labeled in part "Dr. Smith's Caloric Vita Oil," was falsely and fraudulently represented as an effective treatment, remedy and cure for diphtheria, pneumonia, croup, rheumatism, weak joints, colic, lumbago, earache, painful menstruation, caked breasts, diarrhea, lockjaw, itch, spinal meningitis and many other conditions. In September, 1920, Loring J. Barker pleaded guilty and was fined $100.—[*Notice of Judgment No. 10940; issued Jan. 4, 1923.*]

Gold Medal Brand Sexual Pills.—The S. Pfeiffer Mfg. Co., St. Louis, Mo., shipped in October, 1920, a quantity of this preparation that was misbranded. The federal chemists reported that analysis showed the pills to contain phosphorus and extracts of damiana and nux vomica. The statements regarding the curative effects of the pills appearing on the labels of the boxes and cartons were false and fraudulent, as the preparation contained no ingredient or combination of ingredients capable of producing the effect claimed. In May, 1921, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed. —[*Notice of Judgment No. 10864; issued January, 1923.*]

Lovett's Pills.—A quantity of "Dr. Lovett's Pills" invoiced by Dr. Lovett Medicine Co., New York City, were shipped from New York to Los Angeles in November, 1921. The Bureau of Chemistry reported that analysis showed the pills to contain iron sodium, and potassium carbonates and sulphates with traces of plant extractives. Among the claims made on or in the trade package for this preparation were:

"This . . . purifier of the blood is . . . the only infallible specific to cure radically and permanently general debility . . . headache, rheumatism, sexual debility, sterility, malarial fevers, diseases of the liver, syphilis, scrofula," etc.

These and a number of equally wild claims were declared false and fraudulent and in June, 1922, judgment of condemnation and forfeiture was entered and the court ordered that the product be disposed of in accordance with the provision of the Food and Drugs Act.—[*Notice of Judgment No. 10869; issued January, 1923.*]

Savanol.—G. P. Steyh, St. Louis, Mo., shipped in May, 1921, from Missouri to California a quantity of "Savanol" which was misbranded. The federal chemists reported that analysis showed Savanol to consist of capsules containing a saponifiable oil with traces of savin oil, apiol and aloin. The claims made on the trade package for this preparation were to the effect that it was an emmenagogue. These claims were declared false and fraudulent and in April, 1922, judgment of condemnation and forfeiture was entered and the court ordered that the product be disposed of according to law.—[*Notice of Judgment No. 10872; issued January, 1923.*]

Locock's Cough Elixir.—A quantity of "Dr. Locock's Cough Elixir," alleged to have been shipped in interstate commerce by I. L. Lyons & Co., Ltd., New Orleans, in August, 1919, was declared misbranded. The federal chemists reported that analysis of a sample showed it to consist essentially of extracts of plant drugs, including ipecac and squill, small amounts of morphin and acetic acid, sugar and water. The trade package contained statements to the effect that the product was recommended as hastening a cure for incipient consumption, pneumonia, whooping cough, asthma, pains in the joints, bones and muscles, etc. These claims were declared false and fraudulent and in May, 1922, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 11024; issued January, 1923.*]

Sex-Co Restorative Tablets.—The Clyde Collins Co., Memphis, Tenn., shipped in April, 1921, a quantity of Sex-Co Restorative Tablets that were misbranded. The federal chemists reported the analysis showed the tablets to contain strychnin, extract of damiana, iron and a phosphorus compound. The tablets were recommended as an aphrodisiac and for "Bad Blood, Sexual Weakness, Loss of Appetite, Wasting Diseases and Nervous Conditions of all Kinds." Since the tablets contained no ingredient or combination of ingredients capable of producing the effects claimed, the claims were declared false and fraudulent. In June, 1922, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 10760; issued Dec., 1922.*]

Compound Tansy, Pennyroyal and Cotton Root Pills.—The Allan-Pfeiffer Chemical Co., of St. Louis, Mo., shipped in June, 1920, a quantity of these pills which were misbranded. The federal chemists reported that they consisted essentially of iron sulphate, aloes and oil of pennyroyal. They were recommended as a "Safe and Effectual Remedy in Suppressed or Painful Menstruation." As the claim was false and fraudulent, the product was declared misbranded and in May, 1922, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 10822; issued Dec. 23, 1922.*]

Correspondence

MILK GOATS AND MALTA FEVER

To the Editor:—It is now well known that many dairy cows are tuberculous, and that a high percentage of bone, joint, gland and abdominal tuberculosis is due to tubercle bacilli of the bovine type. In order to avoid this source of infection many physicians have interested themselves in the Swiss milk goat whose high degree of immunity to tuberculosis has been well known in Europe for many years.

It has been known for a long time that goats are susceptible to a disease known as Malta fever and that this disease may be transmitted to man through the agency of goat's milk.

In January, 1911, I located in the hill country of southwest Texas to secure the advantages of its excellent climate. I met here an able physician, London trained and a keen observer. This physician, who had been doing an extensive practice over one of the largest mohair goat raising sections of the country for twenty years, had made a clinical diagnosis of Malta fever on several occasions.

In the spring of 1911, Dr. Joseph Walkup, Captain, M. C., U. S. Army, visited me at Kerrville, Texas; his attention was called to the fact that cases presenting clinical symptoms of Malta fever were occasionally seen in Edwards County and near the Mexican border. Dr. Walkup said that he would bring the matter to the attention of the proper army officers, and suggest laboratory tests. In the fall of 1911, Gentry and Ferenbough of the U. S. Army made their investigations and report on Malta fever in Edwards County, Texas, and along the Mexican border.

Kerrville is a leading center of the Angora goat industry, and millions of pounds of mohair pass through its warehouses each year. I have been in charge of a general hospital in Kerrville for twelve years. We are surrounded by goats—mohair goats for their hair, Mexican goats for meat, and Swiss goats for milk.

During the last twelve years just two cases of Malta fever have been noted by us in this vast territory, and not a single case has been admitted to the hospital. As we have a well trained pathologist, it would be difficult for a suspicious case to escape identification.

The Swiss milk goat is in America to stay. The milk goat industry bids fair to become one of the most important branches of our live stock industry. The U. S. Department of Agriculture and the departments of agriculture of several states maintain herds of milk goats for study and experiment.

Malta fever in goats is easily determined by serologic test. My observation leads me to believe that infected herds in the United States can trace the infection to infected herds in Mexico. And while the menace of Malta fever from goat's milk is infinitesimal as compared to the menace of tuberculosis from the milk of tuberculous cows, we as physicians should fight for an absolutely clean milk supply. Every cow and every goat used in a commercial dairy should be required to show a clean bill of health, and the same rule should apply to each employee who handles the milk until it reaches the consumer.

There are many competent physicians and hundreds of parents who have seen goat's milk succeed when modified cow's milk and patent baby foods absolutely failed. To them goat's milk probably seems quite indispensable.

Its superiority is generally admitted by those who have used it, and it offers us as physicians a safe, clean source of raw milk supply. Eliminate Malta fever by serologic test, and we can recommend goat's milk to our patients as far superior to cow's milk chemically, physically and bacteriologically.

The combined efforts of physicians, parents and men of wide business experience have robbed the back alley of its threadbare joke and forced the admission of her aristocratic Swiss cousin into the most select circles of our pure bred live stock families. Let us use our influence in keeping her free from disease and supporting her in the exalted position she now occupies—the savior of the babies.

WILLIAM LEE SECOR, M.D., Kerrville, Texas.

CONSTIPATION—TUBERCULOSIS—HYDROTHORAX

To the Editor:—Constipation is generally considered to be due to sluggish bowels. All our numerous attempts at treatment are based on the notion of sluggish bowels. Has it ever been shown that the bowels are ever unduly sluggish? Is it not a fact that the rectum and not the intestine is loaded in constipation?

H. A. Kelly (Medical Gynecology, 1908, p. 191) conceives constipation to be an inertia of the defecation reflex, a conception that is in harmony with all clinical data. It explains the correlation of constipation with neurasthenia, and also the paradox that while we have numerous cathartics we have no cure for constipation. A simple motor function reacts to any change in the environment, while a depressed reflex is out of the range of our materia medica, which contains no analeptics, no sensory stimulants, and no drug or combination of drugs that might affect simultaneously all the elements of a reflex.

Incipient apical tuberculosis is looked for in adult life but never found. Then it is already—whether active or extinct—fairly advanced, having had its opportunity for spreading the disease. The period of life of the second dentition, because of a lull in the cases of clinical tuberculosis, is looked on with equanimity. But does not the fact that the tuberculin positive test keeps on rising, reaching its maximum with the end of this period, signify that tuberculosis in later life had its incipiency at this period? As to the portals of entrance, can we conceive of more ideal ones than the lacerated gums picked at with fomites by the insanitary child who is mostly at large and exposed? By taking better care of children at this age, cannot we hope to increase the proportion of extinct cases?

The greater frequency of dextral hydrothorax is generally attributed to the compression of the azygos veins. Cannot this condition be accounted for by the more direct back pressure on the mouth of the lymphatic duct and pleural sac of the right side than on that of the left?

JACOB LANSKI, M.D., Chicago.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

THE WIDAL TEST

To the Editor:—We have been advised of a test that differentiates between a positive Widal reaction due to a previous vaccination against typhoid, and a reaction due to the disease itself. If this test is reliable, please give the technic. MEDICO.

ANSWER.—The only reliable method for confirming a clinical diagnosis of typhoid fever in a previously vaccinated person is blood culture. However, during the World War, in vaccinated patients suffering from a continued fever clinically like typhoid, a progressive rise and fall in the agglutination curve was considered diagnostic of typhoid fever. Brösamlen observed a steep rise in the agglutination curve in 53 per cent. of thirty-two vaccinated typhoid patients. Hergt reported similar findings, adding that the curve was less abrupt when vaccination had been performed two years or more before the disease was acquired. The value of such findings is impaired, however, when it is considered that many other diseases may temporarily increase the agglutinative power in previously vaccinated persons. In a case of pneumonia, for example, on the first and third days, Rist found the agglutination test negative, whereas on the fifth day a titer of 100 was found, and later a titer of 300. Somewhat similar results were obtained in rheumatic fever, amebic liver abscess, tonsillitis, laryngitis and simple diarrhea. In fact, only one disease is known which, instead of increasing or leaving unimpaired the agglutinative power of vaccinated patients, causes it temporarily to disappear. This interesting exception is measles. Rist performed more than 11,000 agglutination tests on vaccinated and unvaccinated fever patients. He concluded that the agglutination titer is not distinguishable from the same titer in vaccinated persons suffering from any other disease, that the value of the agglutination test in vaccinated persons to determine whether or not they have typhoid fever is absolutely nil, and that "No caution, no niceties of technic, no careful consideration of titer or of the behavior of curves are of any avail whatever."

ELECTRICITY IN HYPERTENSION

To the Editor:—What is the present status of the use of electricity in the reduction of hypertension.

J. W. STOFER, M.D., Gallup, N. M.

ANSWER.—Wilfred Harris, in his book on Electric Treatment, states that beneficial results follow the use of high frequency currents in high blood pressure, whether applied by autoconduction or local application. He maintains that these results are quite permanent. On the other hand, W. J. Turrell, in his Principles of Electrotherapy, warns one of the danger of static electricity in hypertension. Others are of the opinion that, while the high frequency current will reduce high blood pressure by dilation of the capillary vessels, the result is not permanent.

XANTHINURIA

To the Editor:—I have a patient who has been suffering from bilateral nephrolithiasis in a severe form for four or five years. He has been in a number of hospitals in this state and in Atlanta. There are xanthin crystals present in the urine, which is said to be uncommon. It is reasonable to presume that the calculi in this case are composed of the same substance, although no analysis of a passed stone has ever been made. In view of the presence in the urine of these crystalloids, is there any rational therapeutic procedure that may be undertaken to prevent the formation of further calculi? Please omit my name.

H. S. G., Kissimmee, Fla.

ANSWER.—Renal calculi composed of xanthin are extremely rare, only a few specimens having been reported in the literature. Xanthin is a purin base that is normally converted into uric acid by the action of an enzyme that is apparently secreted in the liver. Defective xanthin metabolism is therefore closely related to gout. Purin bases, in general, are derived from the catabolism of nucleic acid, which is partly endogenous, or derived from the destruction of the body cells, and partly exogenous, or taken in with the food. The former fraction is not subject to modification, but the latter can be regulated by proper selection of food materials. In general, it may be said that the principal foods with high purin content are meats (especially sweetbreads and liver), fish, peas, beans, asparagus, onions, tea, coffee and chocolate. Eggs, butter, milk and cheese contain no purin bodies. It seems rational to consider that the regulation of the diet in an effort to meet this condition and the principles to be followed are similar to those in gout. The purin content of the blood should be determined, and the rapidity with which this becomes reduced on a purin-free diet to that of endogenous origin (normally about 0.5 mg. a day) should be studied in order to determine the functional capacity of the body to deal with these substances. Additions may then be made in accord with this capacity. Further details are given in the standard textbooks on dietaries, such as that of Friedenwald and Ruhräh, or that of Carter, Howe and Mason.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALASKA: Juneau, March 6. Sec., Dr. Harry C. De Vighne, Juneau.

IDAHO: Boise, April 4. Dir., Mr. Harry L. Fisher, Boise.

IOWA: Des Moines, March 8-10. Sec., Dr. Rodney P. Fagen, State House, Des Moines.

MAINE: Portland, March 13-14. Act. Sec., Dr. Adam P. Leighton, 192 State St., Portland.

MONTANA: Helena, April 3. Sec., Dr. S. A. Cooney, Power Bldg., Helena.

NEW HAMPSHIRE: Concord, March 9-10. Sec., Dr. Charles Duncan, Concord.

District of Columbia October Examination

Dr. Edgar P. Copeland, secretary, Board of Medical Supervisors of the District of Columbia, reports the oral and written examination held at Washington, Oct. 10-12, 1922. The examination covered 8 subjects and included 80 questions. An average of 75 per cent. was required to pass. Nine candidates were examined, all of whom passed. Five candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Georgetown University		(1921)	88.8, 89.5
George Washington University	(1916) 85.1, (1922) 76.3, 82.8, 82.9, 84.1, 86		
Howard University		(1922)	75

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Coll. of P. and S., Baltimore		(1896)	W. Virginia
Johns Hopkins University		(1911)	Minnesota
Maryland Medical College		(1904)	Maryland
Univ. of W. Tenn.		(1914)	Missouri, (1915) Tennessee

New Jersey October Examination

Dr. Alexander MacAlister, secretary, New Jersey State Board of Medical Examiners, reports the written examination held at Trenton, Oct. 17-18, 1922. The examination covered 9 subjects and included 90 questions. An average of 75 per cent. was required to pass. Of the 12 candidates examined, 6 passed and 6 failed. Forty-four candidates were licensed by reciprocity, and 2 candidates received osteopath licenses by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Harvard University		(1921)	83.8, 86
Tufts College Medical School		(1921)	77
Woman's Med. College of Pennsylvania		(1921)	84
Queen's University, Kingston, Ont.		(1921)	83.1
University of Berne, Switzerland		(1916)*	75.1
	FAILED		
University of Budapest, Hungary		(1914)*	68.6
University of Catania, Italy		(1915)*	72
University of Naples, Italy	(1903)* 72.6, (1916)* 70.1, (1919)* 69.1		
University of Valencia, Spain		(1915)*	66.6

College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement with
University of Georgia		(1906)	Georgia
Chicago College of Medicine and Surgery		(1917)	Illinois
Rush Medical College		(1895)	New York
Tulane University		(1921)	New York
Johns Hopkins University		(1907)	Maryland
Maryland Medical College		(1912)	W. Virginia
University of Maryland		(1921)	Maryland
University of Michigan Medical School		(1912)	Michigan
Washington University		(1918)	Maryland
Columbia University	(1913), (1918), (1921, 3)		New York
Fordham University	(1920), (1921, 6)		New York
Long Island College Hospital		(1904)	New York
N. Y. Homeo. Med. Coll. and Flower Hospital		(1901)	New York
Univ. and Bellevue Hosp. Medical College		(1921, 3)	New York
Jefferson Medical College (1896), (1907) Pennsylvania, (1921) Delaware, North Carolina			
Medico-Chirurgical College of Philadelphia		(1910)	Penna.
Temple University		(1908)	Penna.
Univ. of Pa.	(1894), (1907), Penna., (1921)		New York
University of Tennessee		(1918)	Tennessee
Baylor University		(1921)	New York
University of Vermont	(1919), (1921)		Vermont
University of Virginia		(1921)	New York
McGill University		(1920)	Michigan
Queen's University		(1914)	New York
University of Munich, Germany		(1911)*	Texas
University of Naples, Italy		(1916)*	New York
Osteopaths			Missouri, Pennsylvania

* Graduation not verified.

Porto Rico October Examination

Dr. M. Quevedo Baez, secretary, Porto Rico Board of Examiners, reports the written and practical examination held at San Juan, Oct. 3-7, 1922. The examination covered 9 subjects and included 75 questions. An average of 75 per cent. was required to pass. Of the 10 candidates examined, 9 passed and 1 failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Howard University		(1922)	75.4
Rush Medical College		(1922)	77.7
University of Mich. Med. School		(1921)	82.1, 88.6
St. Louis University School of Medicine		(1922)	85
Syracuse University		(1921)	82, 87
Jefferson Medical College		(1920)	83.7
Medical College of Virginia		(1921)	83.8
	FAILED		
Chicago College of Medicine and Surgery		(1916)	69.7

Kentucky December Examination

Dr. A. T. McCormack, secretary, Kentucky State Board of Health, reports the oral, written and practical examination held at Louisville, Dec. 5, 1922. The examination covered 11 subjects and included 110 questions. An average of 70 per cent. was required to pass. Of the 8 candidates examined, 7 passed and 1 failed. One candidate was licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Hospital College of Medicine, Louisville		(1906)	80
Kansas City University of Physicians and Surgeons		(1921)	80
St. Louis College of Physicians and Surgeons		(1922)	78
Eclectic Medical College		(1922)	88
Meharry Medical College		(1921)	73
University of Virginia		(1919)	92
University of Jurjev, Russia		(1894)*	76
	FAILED		
Meharry Medical College		(1918)	66

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Meharry Medical College		(1917)	Tennessee

* Graduation not verified.

Medical Economics

CONFERENCE ON NEW YORK STATE MEDICAL PROBLEMS

Governor Alfred E. Smith of New York held a conference in the capitol at Albany, February 26, with representatives of the Medical Society of the State of New York and others, to discuss some of the medical problems of the state.

RURAL MEDICAL PROBLEMS

The state commissioner of health, Dr. Herman E. Biggs, called attention to the small number of physicians now locating in rural districts, and to the difficulty residents of those sections have in obtaining medical aid. The situation is likely to grow worse, rather than better, in Commissioner Biggs' opinion, unless action is taken, but establishment of health centers to relieve the situation, as proposed by the state department of health as a way out, proved unacceptable to the medical profession. There seems to be a need, Dr. Biggs said, for establishment of hospitals of a proper type—possibly cottage hospitals such as exist in England, acting as feeders to the larger hospitals in metropolitan centers—and rural ambulance service is essential. The people of the sections where these facilities are most needed cannot provide them for themselves. Looking on the protection of health and the relief of sickness as fundamental functions of the state, Commissioner Biggs thought that government aid should be provided in time to prevent serious consequences from the present trend of affairs.

Dr. Arthur W. Booth, president of the state medical society, did not look on the situation as so serious as pictured by Dr. Biggs. If adequate hospital and laboratory facilities are provided, young physicians will, he believed, go into rural communities to practice; and if such communities fail to provide the necessary facilities for medical service, they should not blame physicians for not coming to them, or blame the state for not providing them. Dr. Booth and other speakers emphasized the fact that so-called rural communities were in numerous instances solving the problem for themselves by providing hospital service, and called attention to the number of instances in which they had done so.

Dr. Walter E. Kidder of Oswego suggested the advisability of the establishment by the state of scholarships in medical schools, to be awarded to students who will obligate themselves to practice in rural communities for a certain number of years after graduation, but it was suggested that such scholarships would have to be filled by young men from the country, since it would be found practically impossible to make a country doctor out of a city bred youth. Emphasis was laid on the seasonal character of the problem, there being no difficulty in obtaining medical service during the warmer portions of the year, when the roads were open. Farmers in their automobiles pass the offices of nearby physicians during the warmer periods of the year, to avail themselves of the services of supposedly better physicians in nearby cities and towns, but are dissatisfied because they do not have local physicians at their beck and call during the winter months. Physicians who locate in the country sooner or later tire of this condition, and move to the cities and towns. Young physicians were deterred from entering country practice, it was said, because of the small fees charged by the older local practitioners, fixed on a scale that was reasonable enough when they began practice, but not in keeping with the present cost of medical education or the expenses of medical practice. Dr. Booth suggested that persons living in sparsely settled country districts must learn that the day is gone when a doctor can properly treat them in their own homes, winter and summer, day and night, and that they must provide hospital and ambulance facilities to enable their sick to be cared for in proper local hospitals. The cottage hospital idea, except in extreme and difficult situations, met with no general approval, the opinion being apparently that a three or four bed hospital, in which only minor surgery could be done and with limited laboratory facilities, would not be sufficiently attractive to aid in bringing competent practitioners into the communities so equipped. Hospital facilities, laboratory facilities, and a certain amount of competition were essential, Dr. Booth said, to make a place an attractive location for a physician.

THE NARCOTIC DRUG PROBLEM

The narcotic drug problem was discussed by Drs. Haven Emerson, Harlow Brooks, Walter Timme, Carleton Simon, and Amos O. Squire. There was a general sentiment in favor of the principles embodied in the Harrison Narcotic Law, and of having state narcotic legislation conform to it. The Harrison law, it was generally agreed, is adequate so far as the medical profession is concerned. What is needed is better law to deal with the smuggler, the narcotic drug pedler, and the addict of criminal type. Dr. Emerson and Dr. Brooks agreed that narcotic drug addiction is not a disease. Dr. Simon, special deputy police commissioner, in charge of the antinarcotic work of the New York City Police Department, emphasized the distinction between addicts who constitute medical problems and those who are essentially police problems. Out of 6,235 drug addicts arrested in New York City in the last two years, only 2 per cent. attributed their drug addictions to treatment by physicians for disease or bodily infirmities. The remainder became drug addicts through vice and evil companionship. The addicts who in their addiction constitute true medical cases constitute a small part of the entire group and can obtain adequate treatment, Dr. Simon thought, but the rest should be handled by the police. Dr. Squire confirmed the general belief that narcotic drug addiction is on the increase, basing his statement on the increase during recent years in the number of drug addicts among prisoners committed to Sing Sing. He concurred in the opinion that drug addiction is due oftener to evil associations than to medical treatment, and called attention to the temptations by drug pedlers, who give prospective victims opportunities to test drugs, thus creating addicts. Only a small percentage of addicts, he thought, are ever permanently cured, although all are eager to be treated and are grateful patients.

MEDICAL EDUCATION

Dr. William Darrach, dean of the Columbia University College of Physicians and Surgeons, urged that there be no letting down in the standard of medical education. He suggested the possibility of a revision of the standard medical curriculum of today so as to make each graduate essentially a general practitioner, leaving the development of specialists in any line to those willing to supplement the standard four year course of training by additional study. As one factor calculated to influence young men in entering the medical profession, he urged the fixing of a single standard by the government for all who desire to enter upon the treatment of disease and injury. To require of a physician the equivalent of two years of college work, four years of study in a medical school, and one or two years in a hospital, before allowing him to practice, while at the same time allowing an irregular practitioner of healing to assume substantially the same responsibilities with respect to human life and public health as is assumed by physicians, but requiring of such irregular healer no fixed amount of preliminary education and only eighteen months of medical training, is hardly a rational or a fair procedure. Dr. W. D. Cutter, secretary of the state board of medical examiners, urged the need of better provision for the enforcement of the medical practice act in New York State, endorsing legislation vesting in the attorney general certain authority with respect thereto, supplementing, but not diminishing, the authority of local district attorneys to prosecute on the basis of information furnished by county medical societies. Dr. Simon Flexner of the Rockefeller Institute urged that nothing be done that would hamper or prevent medical research, and spoke particularly of the danger inherent in a bill now before the legislature, which, under the guise of preventing "experimentation" on children, would prevent the use of a new remedy for disease or injury.

At the close of the meeting, a committee was appointed to formulate the principles agreed on and to cooperate with the governor in carrying such principles into effect as circumstances indicate.

Book Notices

STUDIEN ZUR ANATOMIE UND KLINIK DER PROSTATAHYPERTROPHIE. Von Julius Tandler. O. Ö. Professor, Vorstand des Anatom. Institutes an der Universität Wien, and Otto Zuckerkandl, A. O. Professor der Chirurgie an der Universität Wien. Paper. Price, $3.60. Pp. 130, with 121 illustrations. Berlin: Julius Springer, 1922.

This is the product of one of the most fruitful combinations in medical work, the collaboration of the theoretical scientist with the clinician. In the introductory chapter the authors analyze the older theories concerning the nature and causes of prostatic hypertrophy; they deny the rationality of the term prostatism, refute the interpretation of prostatic hypertrophy as a compensatory or inflammatory reaction, and assert that the type of this tumefaction is glandular, and that this glandular hyperplasia originates in rudimentary glands. Hyperplasia is the primary factor; the changes in the fibrous skeleton are secondary. The variations in the microscopic pictures are explained by the fact that in this neoplasm of the prostate new formation of tissue and regressive metamorphosis occur simultaneously. It is declared to be still an open question whether prostatic hypertrophy is to be considered a true neoplasm or a hyperplasia. Tandler and Zuckerkandl have proved that prostatic hypertrophy is always confined to a well circumscribed area of the prostate, and that in growing it begins at the urethra, pushes aside the prostatic gland and finally compresses it, so that the tumefaction forms the nucleus of a prostate that was transformed into a capsule by stretching. The authors recede now from their original statement that the median lobe is the exclusive seat of prostatic hypertrophy. They are now convinced that the adenomatous intumescence originates in rudimentary glands pertaining to the upper part of the prostatic urethra. They distinguish two main types of prostatic hypertrophy. The general character of the first type is based on the fact that the vesical urethral opening is changed in a characteristic way by the prostatic tumor, which protrudes into the cavity of the viscus. The internal urethral orifice is no longer flush with the vesical floor, but is either located on top of the prostatic protrusion or is to be seen somewhere on the dependent side of this pathologic hillock. Thirty-two illustrations show all the variations of this type, and histories of clinical cases are given. The second type is represented by the cases in which the whole tumor is located subvesically. The basis of the bladder is dislocated upward, but the internal urethral orifice and its relation to the muscular apparatus remains unchanged. There is no recessus retroprostaticus inside the blader, and the urethral orifice is on the same plane with the surrounding structure. The hypertrophy is limited to the upper part of the prostatic urethra, and the tumor mass surrounds the urethra like a ring. If this subvesical tumor is enucleated, it shows the form of a globe or of an ovoid. The fourth subdivision deals with tumefactions around the vesical opening that cannot be classified as true prostatic hypertrophy, for instance, endovesical myoma, and a submucous myoma. Next follows a chapter describing the secondary changes in the bladder and its appendages due to the stagnation of the urine produced by prostatic hypertrophy. In discussing cancer of the prostate, the authors are inclined to believe that the malignant degeneration is secondary to the hypertrophy in most cases. They also believe that secondary prostatic cancer almost never produces metastases, while primary carcinoma, the so-called Recklinghausen tumor, shows an inclination toward metastasis in the bones. An interesting chapter deals with the fate of the wound cavity after prostatectomy. The simultaneous occurrence of diverticula and prostatic hypertrophy is also discussed as to diagnosis, complications and operative results. In regard to true relapses after prostatectomy, the authors maintain that they may originate only in parts of the mucosa of the upper prostatic urethra that were left by the operation. The concluding chapter elaborates on the details of diagnosing prostatic hypertrophy with all the possible complications. Cystoscopic pictures of striking beauty accompanying the test. This book is a worthy document for the scientific thoroughness of the authors, one of whom, unfortunately, died before the work was published.

LATERAL CURVATURE OF THE SPINE AND ROUND SHOULDERS. By Robert W. Lovett, M.D., Sc.D., John B. and Buckminster Brown Professor of Orthopedic Surgery, Harvard University. Fourth edition. Cloth. Price, $2.50. Pp. 217, with 172 illustrations. Philadelphia: P. Blakiston's Son & Co., 1922.

This edition is of the high character of the previous editions. It furnishes an excellent guide for the general practitioner and specialist who wish to study this most difficult subject. Referring to the matter of faulty attitudes in school and elsewhere the author says that in his opinion it is not likely that they are the causes of moderate and severe structural scoliosis. Regarding the Abbott method of treatment, he says, "The method is evidently no cure-all, and his claims have apparently not been substantiated by others." Operative procedures are still held sub judice, sufficient time not having elapsed since their introduction to allow a proper estimate of their value. Lovett strongly emphasizes the necessity of mobilizing spines in order to obtain the greatest correction, and the need of much gymnastic work in the follow-up care after forcible correction in casts and jackets. The legends of Figures 96 and 97 are reversed; and in the chapter on occurrence, in referring to the occasional appearance of scoliosis in fowls, after ruling out several mentioned causes as not acting in the given cases, the author makes the rather startling physiologic observation that "we must attribute the cause either to intra-uterine pressure or to purely static causes arising late in life." Since this comment has appeared in the preceding editions, it suggests that some parts of the text have not had very careful reading either by the author or by his students, who could hardly fail to notice the anomaly of intra-uterine pressure in the domestic fowl.

TRAITÉ DE PATHOLOGIE MÉDICALE ET DE THÉRAPEUTIQUE APPLIQUÉE. Publié sous la Direction de Émile Sergent, Professeur de Clinique médicale propédeutique, L. Ribadeau-Dumas, Médecin de la Maternité, et L. Babonneix, Médecin de la Charité. Tome X: Sang, Organes Hématopoïétiques Rate, Os. Par Pr. Bezançon, Le Sourd, Agasse-Lafont, Pagniez, Hazard, Sainton, Apert. Paper. Price, 25 francs. Pp. 544, with 71 illustrations. Paris: A. Maloine et Fils, 1922.

The tenth volume of the treatise on medical pathology and applied therapeutics of Sergent, Ribadeau-Dumas and Babonneix covers diseases of the blood and hematopoietic organs, spleen and bones. Following an introduction by Bezançon and Le Sourd, pointing out the value and importance of a study of hematology, the book is divided into three sections. Part 1, by Pagniez and Agasse-Lafont, deals with the diseases of the blood and hematopoeitic organs, and includes a section by Hazard on the physical and chemical examination of the blood. Part 2, by Agasse-Lafont, treats of diseases of the spleen. Part 3, by Sainton, has to do with diseases of the bones, and includes a chapter on rickets, by Apert. Each of the sections is written in a clear and concise manner, the subject matter being well selected and, in the main, adequate, although none of the discussions seem as comprehensive as would be expected from the character of the work. In the chapter dealing with the chemical examination of the blood, little or no attention is paid to the work of our American investigators, who have done so much to advance this field of clinical diagnosis, and no mention is made of the study or determination of the hydrogen ion concentration of the blood. The purely clinical part of the work follows the usual discussions of the subjects treated, and offers little or nothing that is new. However, there is much of value in the work for the general student and practitioner.

DIE RÖNTGENDIAGNOSTIK DER MAGEN- UND DARMKRANKHEITEN. Von Dr. Emmo Schlesinger, Specialarzt für Magen- und Darmkrankheiten in Berlin. Second edition. Paper. Price, 1,530 marks. Pp. 402, with 236 illustrations. Berlin: Urban & Schwarzenberg, 1922.

The author professes that his aim in writing this book was to furnish a reliable guide for beginners, to be of help to practicing roentgenologists, and to point out to the men who engage in roentgen-ray research work the questions that are still open, in order to stimulate progressive investigation. The author has succeeded in this self-imposed task. Although

an enthusiastic roentgenologist, he insists that roentgen-ray diagnosis never should be used independently, but should be employed in cooperation with all other diagnostic means. He concedes to the surgeons that they were the initiators of roentgen-ray diagnosis, as they recognized its importance prior to the internists. After discussing the technology, the author presents and interprets pictures of the normal organs, and brings the visible changes due to functional activities into comparison with the outlines of the quiescent organs. Pathologic conditions and their expressions in the roentgenogram and in the fluoroscopic picture are taken up, special stress being laid on differential diagnosis and possible sources of error. The surgical pathologic conditions and the resulting indications are particularly well worked out in detail. This chapter is very instructive because a large number of the cases reported and illustrated were controlled either by midoperative or postmortem observations. In this way, roentgenologic findings may be compared with the findings during operations, as in resections and entero-anastomoses, while postoperative pictures confirm or disprove the results. The author devised a method of roentgenologic determination of the acidity of the stomachic secretion without use of the stomach tube. He describes minutely its execution. The details of this book cannot be the subject of a review: they have to be studied as they are presented. There are a multitude of excellent pictures covering our knowledge of the diagnosis of diseases of the digestive tract. The explanatory text covers in a perspicuous, concise way all that a scientific interpretation demands.

ENCYCLOPÉDIE FRANÇAISE D'UROLOGIE. Publiée sous la direction de MM. A. Pousson, Professeur à la Faculté de médecine de Bordeaux, et E. Desnos, Ancien interne des Hôpitaux de Paris. Volume IV. Maladies de la Vessie. Par MM. O. Pasteau, Arcelin, Rouvillois et Ferron, Heitz-Boyer, H. Minet, Ertzbischoff, Verhoogen, Malherbe et Pasquereau, Nicaise, Gaucher et Druelle, Estor et Vialleton, E. Forgue, A. Pousson, Courtade, Paul Delbet, Genouville et Boeckel, Desnos. Paper. Price, 60 francs. Pp. 1154, with 517 illustrations. Paris: Gaston Doin, 1921.

The fourth volume of this huge encyclopedia of urology is devoted to diseases of the bladder. The subject matter is divided into two parts, one embracing methods of examination and the other devoted to the well defined clinicopathologic entities. The various chapters are written by men whose names stand high in modern urologic thought and accomplishment. The clinical diagnostic methods of examining the bladder are described by Dr. Pasteau. The second chapter elucidates roentgenographic diagnosis of bladder lesions. Traumatic lesions of the bladder are thoroughly discussed. Those parts dealing with the pathologic physiology and mechanism of the lesion may serve as an example in completeness. A chapter on cystitis by Heitz-Boyer occupies ninety well written pages, illustrated by colored plates and by numerous half-tones of gross pathologic lesions. The chapter on bladder stone by Drs. Desnos and Minet is exceptional in its completeness and beauty of illustration. There is an entire chapter on syphilis of the bladder; one on acquired bladder fistulas, and a splendid section on functional disturbances.

PRINCIPLES AND PRACTICE OF INFANT FEEDING. By Julius H. Hess, M.D., Professor and Head of the Department of Pediatrics, University of Illinois College of Medicine. Third edition. Cloth. Price, $4 net. Pp. 496, with 34 illustrations. Philadelphia: F. A. Davis Company, 1922.

This book has made a place for itself as a textbook of recognized merit, and as a convenient guide for the practitioner in the problems associated with the successful care and feeding of infants. In the preparation of the third edition the chapters on vomiting, colic, constipation and abnormal stools have been completely rewritten. New chapters dealing with rickets, scurvy, spasmophilia, acidosis and anemia have been added, and all of the chapters on the nutritional disturbances have been revised and brought up to date. In order to accommodate this additional material, the form of the book has been changed to a larger page size. With the additions the book is an up-to-date, practical reference work on the care and feeding of the infant.

Miscellany

AMEBIC DYSENTERY: ITS PREVALENCE, DIAGNOSIS AND TREATMENT

The study of dysentery from an etiologic point of view, as Kilpatrick[1] points out, has received more scientific attention during the last twenty years than ever before, because of the increasing importance given to tropical medicine in our own country and, especially, in England. "Dysentery," as the term is used today by many physicians, simply signifies a symptom-complex of frequent bowel movements with pain, tenesmus, and blood in the dejecta. In this sense, according to Reed[2] it may be purely symptomatic; it may be due to bacterial infection, tuberculosis, syphilis, poisoning with mercury or arsenic, mechanical irritation, animal parasites, kala-azar, pernicious malaria and trematodes, infection with ciliate and flagellate parasites, and *Endameba histolytica*.

The common belief used to be that amebic dysentery was a purely tropical and subtropical disease. Data based on improved methods of examining stools and on controlled clinical observations of men under orders during the war, and of various classes of civilians since the war, show that the disease is fairly common in temperate climates also.

The British suffered heavy casualties from amebic dysentery in the Gallipoli campaign. They therefore gave a number of their protozoologists intensive training, and placed in their hands large numbers of men suffering from chronic dysentery, concentrating them in special hospitals. Allan,[3] in summing up the literature of the last few years on this subject, gives some interesting statistics tabulated from reports of Archibald, Hadfield, Logan, and Campbell,[4] of the Royal Army Medical Corps. Of 31,000 British troops returned from the Near East, 9.8 per cent. were carriers of *Endameba histolytica*. Of 7,000 troops and civilians without any history of bowel trouble, examined in the eastern Mediterranean area, 10.5 per cent. were infected; and of 5,000 troops and civilians examined on the western front, 8.9 per cent. were carriers.

Kofoid found by subjecting 2,300 of our troops in New York, just returning from France, to one examination that 12.8 per cent. were infected with *Endameba histolytica*. One examination has been found to uncover only from one-third to one-half the actual number infected, or the number that six examinations will uncover. Hence the actual number affected would probably be from 24 to 36 per cent. The United States Public Health Service was urged to take effective measures to detect and rid our returned soldiers of the infection. Under the direction of the service, Stiles[5] reports that a fairly comprehensive investigation was made to corroborate if possible Kofoid's findings before any expensive and far-reaching measures were decided on, and that the results indicate the prevalence of the disease in this country in general.

Amebic dysentery manifests itself clinically in temperate zones most frequently in the chronic form or in the carrier state, which differs from the former only in degree. The symptoms of chronic amebiasis are, as Reed, Stiles and others point out, bizarre: intercurrent attacks of diarrhea alternating with constipation, neurasthenia, loss of weight, anemia, amenorrhea and a variety of other complaints. Such patients should have repeated stool examinations; on the discovery of the cysts, proper treatment should be instituted. A carrier of cysts may not only develop acute, distressing and dangerous symptoms at any time, as well as liver abscess, but is continually a source of danger to his fellow men. Hogan[6] and a few others have reported cases of appendicitis

1. Kilpatrick, S. C.: Prevalence of Entamebic Disease: Diagnosis and Treatment, South. M. J. **15**: 275-280 (April) 1922.
2. Reed, A. C.: Diagnosis and Treatment of Amebic Colitis, Am. J. M. S. **164**: 587 (Oct.) 1922.
3. Allan, William: A Review of the Recent Work on Amebic Dysentery, Boston M. & S. J. **183**: 545-548 (Nov. 4) 1920.
4. Archibald, R. G.; Hadfield, G.; Logan, W., and Campbell, W.: J. R. A. M. C. **26**: 675, 1916.
5. Stiles, C. W.: The Public Health Status of Amebic Dysentery in the United States as Potentially Influenced by the World War, Boston M. & S. J. **186**: 377 (March 23) 1922.
6. Hogan, E. P.: Appendicitis Caused by Entameba Histolytica with Postoperative Amebic Ulcer Perforation of Cecum, J. Trop. Med. **24**: 259, 1921.

due to an undetected amebic dysentery, and occurring synchronously with it.

The vegetative, freely moving, form seems to develop only in the intestine, and, when conditions there are favorable, it is present in large numbers, bringing on what is recognized as an acute attack. It is then easily discovered in the blood-streaked mucus of the stool. This form must be differentiated from that of *Endameba coli*, which is nonpathogenic. The nuclear material of *Endameba histolytica* is coarsely granular, with the ectoplasm clear and more refractile than that of other large cells in the stool, making the detection of the ameba with the low power comparatively easy. It frequently contains vacuoles, and ingests red blood cells with ease. Only the ectoplasm is actively motile; the endoplasm seems to flow passively along as the ectoplasmic pseudopodia propel it. Movements cease if the specimen is allowed to cool off for any length of time. It then becomes more spherical, and the margin of the ectoplasm appears as a highly refractile ring. There is no sharp dividing line between the endoplasm and ectoplasm of *Endameba coli*. Both seem to extend out into the pseudopodia. It very rarely ingests red blood cells.

Only in chronic cases and in carriers, as a rule, can cysts be found. Cysts develop when conditions for growth become unfavorable. Invasion is believed to be accomplished by the encysted form through contaminated food, fruit or water. The cysts live for a long time in water. They pass through the intestine of flies unchanged and are present in fly droppings. In the intestine of man the cysts are converted into vegetative forms producing undermined ulcers in the cecum and large intestine—ulcers that appear to be secondary to a gelatinous necrosis in which the amebas are found. After specific treatment, and sometimes without this, conditions for its development in time become unfavorable, and the vegetative forms disappear from the stool; but numerous cysts may still be found in solid portions of it. The disease has then become chronic with less acute symptoms, or the patient has become a carrier with practically no symptoms, but with cysts in the stool. This condition is nearly always the result of insufficient or bad treatment.

An absolute diagnosis can be arrived at only on identifying the vegetative, motile form of *Endameba histolytica* or its cyst. The cyst of *Endameba histolytica* must be differentiated from those of *Endameba coli* and *Endameba nana*. The latter is also nonpathogenic. It was first described by Wenyon and O'Connor.[7] It is called *Endolimax nana* by Dobell.[8] *Endameba histolytica* cysts are round, rather small, and have four nuclei. *Endameba coli* cysts are larger, frequently not round, and have eight nuclei. *Endameba nana* cysts have four nuclei. A solid portion of stool mixed with an equal amount of Donaldson's iodin eosin stain brings out the nuclei sharply in cysts. They appear dark brown, the rest of the cyst yellow, and the background pink. A saline purge given carriers of *Endameba histolytica* frequently brings out motile forms.

Emetin, first used by Rogers in 1912, given hypodermically 1 grain (0.065 gm.) a day to an adult, for from ten to twelve days, usually kills off all vegetative forms. But it seems to have little if any effect on the cysts. In 1915 DuMez suggested the use of emetin-bismuth-iodid in these cases. A year later the British began using it, and they have demonstrated its value. It is given by mouth in tablets coated with phenyl salicylate or keratin, 1 grain two or three times a day for twelve days. Frequently after two or three days the number of cysts have markedly diminished. A few persons seem to derive no benefit from emetin or emetin-bismuth-iodid, but reports from a large number of men in the tropics show that the vast majority of cases are cured by it. The usual way of treating acute attacks of amebic dysentery today is to follow the course of emetin with a course of emetin-bismuth-iodid by mouth. In chronic cases, repeated courses may be required. Dobell found that 90 per cent. of relapses in treated carriers occurred within three weeks; but they may occur later. Ditlevsen, Dobell, Allen and many others who have had considerable experience with this disease emphasize the importance of repeated examinations of carriers who have apparently been cured.

7. Wenyon, C. M., and O'Connor, F. W.: Human Intestinal Protozoa in the Near East, 1917.
8. Dobell, E.: The Amebae Living in Man, 1919.

Medicolegal

Notice Required in Actions for Malpractice—Not Liable for Failure to Treat Eyes

(Shovers v. Hahn (Wis.), 190 N. W. R. 432)

The Supreme Court of Wisconsin says that the plaintiff brought this action to recover damages for loss of services of his daughter alleged to have resulted from the failure of the defendant to treat her eyes at birth with a 1 per cent. solution of nitrate of silver, as required by Section 1409a-1, Wisconsin Statutes of 1921. The daughter was born in December, 1918, and this action was begun in September, 1921. No notice of injury was served before the commencement of the action. At the close of the plaintiff's testimony, the trial court granted the defendant's motion for a nonsuit, on the ground that the statutes of limitation of Wisconsin had run on the cause of action, and also on the ground that the plaintiff's evidence failed to show that the injury to the daughter's eye was due to the defendant's failure to administer the nitrate of silver solution; and the judgment of the trial court for the defendant is here affirmed.

It was established in the case of *Frechette* v. *Ravn*, 145 Wis. 589, that in an action by the person injured for malpractice founded on tort the notice required by Section 4222 (5), Statutes of 1921, was necessary, because it was an action for an injury to the person, and in *Klingbeil* v. *Saucermann*, 165 Wis. 60, 160 N. W. 1051, it was held that the notice was necessary in an action by the person injured for malpractice founded on contract. It is therefore settled that, were this an action by the person injured, it could not be maintained without the notice.

It was contended by the plaintiff that, since this was an action by the father for loss of service, it was not an action for injury to the person, and the case of *Wysocki* v. *Wisconsin Lakes I. & C. Co.*, 125 Wis. 638, 104 N. W. 707, was relied on to sustain the claim; and the case squarely sustained it. That case was brought by a father for loss of service, medical expenses, and nursing, caused by a personal injury to his minor son, and the court held that no notice was necessary, because it was not an action to recover damages for injuries to the person, but to recover for loss of service, etc. The fault in the reasoning in that case was that actions were classified, not on the basis of the delict or breach of duty, but on the basis of the kind of damages recoverable. An injured minor may recover several kinds of damages. He may recover for pain and suffering, for disfigurement, for the shame and humiliation caused thereby, for loss of earning capacity after minority, and perhaps punitory damages; but he has but one cause of action; namely, for personal injury. If the rights of others are invaded, the action is none the less one for a personal injury. The Wisconsin statute provides that the party damaged, not necessarily the party injured, shall give notice. It is the delict or breach of duty that characterizes the action, and not the kind of damages recovered. It was the legislative intent to give a person guilty of a personal injury to another timely notice that damages were claimed therefor, to the end that he might protect his interests by seasonably gathering and preserving the requisite evidence available. Under the construction given the statute in the Wysocki case, a minor might receive an injury, not serious so far as his cause of action was concerned, but quite serious as to the father's cause of action. The minor had to give the notice, but the father did not. Wherefore, that case, so far as it relates to the giving of notice of injury, is overruled.

The court overrules the Wysocki case the more readily now because it is convinced that the plaintiff in the present case had no cause of action, because the evidence was so vague that no verdict based on the theory that the injury to the daughter's eye was the result of the failure of the physician to administer the nitrate of silver solution could stand. It would be a pure guess, and contrary to the reasonable probabilities shown by the evidence; namely, that her eyes were diseased before birth, and that no treatment would have availed.

Superintendent Employing Physician for Plantation

(Howison v. Nicholson (Ala.), 93 So. R. 373)

The Court of Appeals of Alabama, in affirming a judgment in favor of the plaintiff, says that he brought suit on an account for medical services rendered and medicine furnished during the year 1920 to the tenants of the defendant. There was no denial of the fact that the services were rendered, and medicine and drugs furnished, and that the account was true and correct. The only question was the liability of the defendant. The plaintiff testified that the only contract he had for the services performed and medicine furnished was made with the defendant's superintendent; that it was the custom on the defendant's farm, and had been for several years, for the superintendent or general manager to employ a physician for the laborers, and to see that the hands on the farm had medical attention, a custom which was known to the plaintiff when he contracted with the superintendent; and that it was the custom of the defendant to pay in the latter part of the year whatever physician rendered the medical services under orders from the superintendent. The defendant denied that the superintendent had any authority to employ the plaintiff, or to make any contract that would bind the defendant without first submitting it to him for his approval, and he testified that the only way he paid for medical attention to any of his hands was in case they had money due them in the fall of the year, which was not the case that year with reference to any of the persons named in the plaintiff's account. But from the testimony of the plaintiff, it was clear that the general manager or superintendent, who was expected to make provision for the health of the laborers, not only was following the custom of the plantation, but also was well within his authority as a general superintendent in contracting with the plaintiff to give medical attention to the defendant's laborers. The plaintiff, as a third party, was no doubt relying on a custom that had prevailed, according to his and a former superintendent's testimony, on this plantation for some years; and it mattered nothing if the defendant did forbid employment for medical services, except in the manner indicated by his testimony. He could have no private agreement with his agent which would prevail, if the plaintiff knew nothing of it but relied on the custom stated. The fact, if it was a fact, that the superintendent profited by such an agreement with the plaintiff, could not, in the light of his authority to make the contract, be any reason for casting it aside, nor any reason for questioning the good faith of the plaintiff in making the contract with the superintendent. It clearly appeared that, while the evidence was in conflict, there was sufficient evidence to support the judgment rendered.

Statute of Limitations and Expert Testimony in Malpractice Case

(Carson v. Jackson (D. C.), 281 Fed. R. 411)

The Court of Appeals of the District of Columbia, in affirming a judgment in favor of the plaintiff without stating the amount, says that the plaintiff alleged that she was suffering from osteomyelitis of the radius of the left arm, but that the defendant through negligence at first treated her arm as if it were not so afflicted, and, after he discovered the disease, negligently and unskilfully treated it, causing much pain and a deformity. The plaintiff was a minor, and the defendant contended that, under the statute providing that such actions must be brought within three years but allowing a minor three years after arriving at his majority to institute such an action, if a minor brings the action during his minority he must do so within three years from its accrual, and that because the plaintiff did not so bring her action within three years it was barred. The court however holds otherwise, being of the opinion that under the statute a minor has the entire period of his minority and three years thereafter in which to institute the action.

On the testimony of laymen relative to the condition of the child's arm and to the treatment given by the defendant, surgeons were asked a hypothetical question, which concluded with the words: "In your opinion, would you say that the physician had given the case the care and attention which a physician and surgeon of ordinary skill and ability practicing in the District of Columbia would have given under all the circumstances as related?" The court sees no reason why the testimony of laymen concerning the treatment given by the defendant to the child's arm was not a sufficient basis for the hypothetical question. The defendant did not contend that the testimony was improperly admitted. Besides, it was open to him to show that the testimony did not correctly describe the treatment or condition of the child, and, if he had satisfied the jury that it did not, the answer of the surgeons, based on it, would necessarily have failed of effect.

Was the question objectionable as invading the province of the jury? By the question, the witness was not asked to say whether or not the defendant had been guilty of negligence or malpractice, although probably that was the effect of the question. In order that the plaintiff might make out her case, it was necessary for her to show to the satisfaction of the jury that the defendant had not given her the care and attention that a physician and surgeon of ordinary skill and ability practicing in the District of Columbia would have given under the circumstances related. She could not prove it, except by surgeons who knew what care and attention such surgeons would have given. Laymen would have been incompetent to testify on the subject. The jurors knew nothing about it. It was quite different from an ordinary case of negligence, in which the jury is able to solve the question by applying thereto their own experiences. In such a case, the test is: How would a reasonably prudent man have acted under the circumstances? There is no room for expert testimony in a case like that. But here it was necessary that the experts should tell the jury the essential thing, namely, whether or not the defendant's treatment of the plaintiff satisfied the standards of care observed by surgeons of ordinary skill in the District. If they simply answered that the treatment was improper or unskilful, that would not have gone far enough. The jury would still be in the dark as to whether or not the treatment was in accordance with the standards just mentioned. Light on that subject could be given only by an answer to a question such as the one propounded.

With respect to whether the question was leading, perhaps it would have been better if the expert had been asked whether in his opinion the treatment was in accordance with the standards mentioned. However, the question propounded could not have prejudiced the defendant. The court assumes that the expert well knew, before the question was asked, what answer was expected of him, and he was not, therefore, influenced by the form of the interrogatory.

What were the circumstances of the case, or what was the treatment given, the court does not state.

No One Pronounced Insane for Religious Belief

(West et al. v. Iowa Seventh Day Adventist Ass'n, Inc. (Ia.), 189 N. W. R. 765)

The Supreme Court of Iowa, in reversing a decree that set aside certain deeds made to the defendant association by a Mrs. Smith, states that a volume of opinionated testimony was offered to prove that she was insane on the subject of the Seventh Day Adventist religion. But this court is bound to say that the law pronounces no one insane or unsound of mind on account of mere religious belief, no matter how unreasonable it may appear to a judge or any one else. A belief in the doctrines maintained by any of the religious denominations would not establish insanity or unsoundness of mind. Still, a person might be a monomaniac as to any form of religion. However, this court is not prepared to say that Mrs. Smith was a monomaniac as to her religion. She was greatly wrapped up and absorbed, and an unceasing worker in her church, and implicitly believed in the efficacy of prayer, and that her prayers were answered, and probably when she spoke of being commanded by God to do certain things, she meant that her prayers were answered. This court can hardly reason that she was insane on that account. Many people so believe. People whose sanity is not questioned claim to converse with people of the spirit world. It is not for this court to pronounce judicially whether they do or not.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Physiology, Baltimore

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*Retinal Reflex in Frogs. V. H. K. Moorhouse, Winnipeg.—p. 177.
*Examination of Certain Proposed Tests for Fatigue. F. S. Lee and J. D. Van Buskirk, New York.—p. 185.
*Mechanism of Sterilization of Female by Spermotoxin. J. L. McCartney, Chicago.—p. 207.
*Studies of Thyroid Apparatus. IX. Effects of Loss of Thyroid and Parathyroid Glands at 100 Days Age on Growth in Body Length, Body Weight and Tail Length of Male and Female Albino Rats. F. S. Hammett, Philadelphia.—p. 218.
Changes in Organ Weights of Guinea-Pig During Experimental Scurvy. D. H. Bessesen, Minneapolis.—p. 245.
*Acetonitril Test for Thyroid and Some Alterations of Metabolism. R. Hunt, Boston.—p. 257.
Distribution of Vagus Nerves to Sino-Auricular Junction of Mammalian Heart. G. Bachmann, Atlanta, Ga.—p. 300.
Studies in Fatigue. XIII. Staircase Phenomenon in Mammalian Skeletal Muscle. C. M. Gruber, St. Louis.—p. 338.
Ash of Human Sweat Produced by Heat and Work. G. A. Talbert, Chicago.—p. 350.
Inadequacy of Our Present Blood Volume Methods. P. D. Lamson and S. M. Rosenthal, Baltimore.—p. 358.
*Shape of Glomeruli and Bowman's Capsules in Active and Inactive Kidney. W. N. F. Woodland, London.—p. 368.
Resistance of Fish to Salts and Alkalinity. R. T. Young, University, N. D.—p. 373.

Retinal Reflex in Frogs.—An investigation of the parts of the central nervous system involved in transmitting the "retinal reflex" impulse is reported on by Moorhouse. Removal of the cerebral hemispheres appears to shorten the average reaction time of the retinal reflex, and to make the response more active. The area of the frog's brain which is most important in forwarding the impulse is the optic tectum, especially the anterior portion.

Results of Proposed Tests for Fatigue.—Lee and Van Buskirk examined experimentally a considerable number of physical tests which either have been proposed, or might be employed, as indicators of fatigue in human beings. They failed to find in any of the tests a reliable criterion of the daily physical fatigue of the individual from such physical exertion as a walk of 14 miles.

Mechanism of Sterilization of Female by Spermotoxin.—McCartney asserts that female rats may be sterilized for a period of from two to twenty-two weeks by subcutaneous injections of spermatozoa, or testis extract (confirming the work of Guyer and Dittler on rabbits). Subcutaneous injections of other organ extracts do not cause sterility. The sterility seems to be due to the presence of spermotoxins in the vaginal and uterine secretions of the immunized animal. These spermotoxins immobilize and agglutinate the spermatozoa. Within limits, the degree of immunity appears to be proportional to the amount of the antigen injected. Immunization with spermatozoa does not affect the sexual cycle (ovulation and rut) of the female (confirming the work of Dittler). Subcutaneous injection of spermatozoa into adult male rats tends to cause destruction of the spermatozoa and atrophy of the testes (confirming the work of De Leslie on rats and Guyer on rabbits). This effect may be only temporary. Subcutaneous injection of sperm suspension from a rooster into egg laying hens, does not influence the rate of egg production, but renders the eggs infertile for a period of from twelve to sixty-seven days. Injection of chicken liver extract does not produce infertility of the eggs.

Effects of Loss of Thyroid and Parathyroid Glands.—Hammett has made an examination of the effects on the growth in body length, body weight and tail length of male and female albino rats deprived of the thyroid and parathyroid, or of the parathyroid glands alone at 100 days of age and then allowed to grow until 150 days of age. The response was a retardation in growth of the parts measured. From the quantitative standpoint the growth of the females was retarded or obstructed to a greater degree by the experimental procedures than was that of the males. It would appear from this that the female rat is more dependent on the stabilizing influence of the thyroid and parathyroid glands in growth than are the males.

Acetonitril Test for Thyroid.—The acetonitril test was developed primarily in connection with a study of thyroid which was to be administered as a drug by mouth. It has served a useful purpose in various ways. Hunt's experiments confirm and extend the work previously reported as to the marked effects of diet on the resistance of mice to acetonitril; they also indicate that vitamins may be concerned in this action. Earlier work showing a very close parallel between the physiologic activity of thyroid (as determined by the acetonitril test) and the iodin content is fully confirmed; this has been found to be true for the thyroids of a number of species of animals and for thyroids with extreme ranges in iodin content; for the thyroid in exophthalmic goiter (with one exception); for thyroid iodized in vivo and for fetal thyroids (with the exception of one abnormal gland). The physiologic activity of thyroxin, both by feeding and by intravenous injection, is (expressed in terms of iodin content) less than that of thyroid. No evidence of the presence of physiologically inactive iodin in the thyroid was found (except in the case of two abnormal glands). Additional experiments are reported showing that the blood in certain pathologic conditions (especially those in which the thyroid is involved, but also in nephritis) contains unknown, or unidentified, substances which markedly increase the resistance of mice to acetonitril.

Condition of Glomerulus During Renal Secretion.—The results of Woodland's experiments are reported completely to disprove the statement of Brodie and Mackenzie that during normal diuresis fluid is contained in the capsule, and to invalidate their conclusion that the glomerular epithelium secretes urine. The only alternative suppositions are that the glomerulus either filters urine or has nothing whatever to do with the actual production of urine. Woodland believes that the whole of the urine is secreted by the tubular epithelium; the encapsulated glomerulus acts solely to reduce pressure and retard current while maintaining volume (in other words, it has the same effect on the blood stream as a waterfall has on a river) and is a device necessitated by the proximity of the kidneys to the aorta—the seat of maximum arterial pressure.

American Journal of Public Health, Detroit

January, 1923, **13**, No. 1

Health Officer's Challenge to General Practitioner. J. D. Robertson, Chicago.—p. 1.
Channel and Some Shoals in Municipal and State Child Hygiene Administration. M. E. Champion.—p. 6.
Important Considerations in Relation of Food to Disease. J. C. Geiger, Chicago.—p. 10.
Tuberculosis Demonstration Plans of Milbank Memorial Fund. D. B. Armstrong.—p. 14.
Place of Proteins in Diet in Light of Newer Knowledge of Nutrition. H. H. Mitchell.—p. 17.
Control of Diphtheria. W. H. Park, M. C. Schroeder and A. Zingher, New York.—p. 23.
Importance of Epidemiology as Function of Health Departments. W. H. Frost, Baltimore.—p. 33.
Service. B. L. Arms.—p. 37.

American Journal of Roentgenology and Radium Therapy, New York

January, 1923, **10**, No. 1

Newer Investigations of Problem of Roentgen-Ray Dosage. O. Glasser, Baltimore.—p. 1.
Problem of Roentgen-Ray Dosage. W. Friedrich, Freiburg, Germany. —p. 6.
Intestinal Reaction to Erythema Dose. C. L. Martin and F. T. Rogers, Dallas, Tex.—p. 11.
Important Points in Technic of Roentgenologic Examinations of Urinary Tract. B. H. Nichols, Cleveland.—p. 19.
*New Light on Gastric Peristalsis. W. C. Alvarez, San Francisco.—p. 31.
*Bone Lesions of Smallpox; Report of Cases. F. B. Sheldon, Fresno, Calif.—p. 35.
Diagnosis and Treatment of Bone Lesions. J. C. Bloodgood, Baltimore.—p. 42.
Ionization Measurements. G. Failla, New York.—p. 48.
Comparative Measurements Between Radium and Roentgen-Rays Concerning Energy Absorbed at Depth. H. R. Gaylord and K. W. Stenstroem, Buffalo, New York.—p. 56.

Results and Technic in Treatment of Carcinoma of Breast by Radiation. B. J. Lee, New York.—p. 62.
Automatic Switch for Bucky Diaphragms. E. V. Powell, New York.—p. 67.
Use of Bucky-Potter Diaphragm with Fluoroscope. W. C. Alvarez, San Francisco, Calif.—p. 69.
Effect of War on Development of Roentgenology. P. M. Hickey, Ann Arbor, Mich.—p. 70.

Gastric Peristalsis.—Alvarez says that new evidence has been obtained as to the location and behavior of the gastric pacemaker. Stomach blocks and dissociations have been observed. Cole's discovery of gastric systoles has been confirmed. Several peculiar types of peristalsis are described, and some contractions are shown which might perhaps be called, by analogy, pyloric extrasystoles. Two or three different types of contraction can take place simultaneously in one segment of the stomach much as they do in one segment of bowel. There is a close relation between the activities of the pyloric end of the stomach and the duodenum.

Bone Lesions of Smallpox.—In one of the cases reported by Sheldon, the woman, a Chinese, had had smallpox when 3 or 4 years of age. At the time she was seen she had deformities of both wrists and shortening of the right humerus and the bones of the right forearm. The ulna in each forearm appeared to be longer than the corresponding radius, causing deformities of the wrists. The second patient, a Chinese, aged 67, entered the hospital for pains in the feet. Roentgenograms showed fusion of the distal extremities of the tibia and fibula. These also were fused with the astragalus. The first and fifth metatarsals of both feet showed shortening. Under the fluoroscope, deformities of the hands and right elbow were noted. Films of the right elbow show complete absence of articulation, and complete fusion of all bones. So complete is this fusion that the medullary canal of the humerus can be followed directly into that of the radius and that of the ulna. The left hand showed marked shortening of the fifth metacarpal, and also a smaller shaft than the right fifth metacarpal. The right hand showed shortening of the first, second, and fifth metacarpals. Of these short metacarpals, only one has a smaller shaft than normal. The history of this man showed no bone injury, no evidence of inflammatory troubles, and no pains or aches until within the last six months, but there was a history of smallpox sixty-four years previously. Both patients being Chinese, Sheldon asks: "Is the particular variola of the Orient different from that of the Occident, or are we simply not recognizing these cases?"

Annals of Surgery, Philadelphia

January, 1923, **77**, No. 1

*Cancer of Larynx: Is It Preceded by Recognizable Precancerous Condition? C. Jackson, Philadelphia.—p. 1.
*Arterial Decortication. C. L. Callander, San Francisco.—p. 15.
*Peri-Arterial Sympathectomy. E. P. Lehman, St. Louis.—p. 30.
Aluminum-Potassium Nitrate in Treatment of Suppurative Conditions, Particularly Osteomyelitis. M. Thorek, Chicago.—p. 38.
Cholecystostomy Versus Cholecystectomy. J. C. O'Day, Honolulu, Hawaii.—p. 48.
Cholelithiasis, Cholecystitis and Cholangitis. A. B. Keyes, Chicago.—p. 52.
Certain Aspects of Surgery of Gallbladder. O. F. Lamson, Seattle.—p. 64.
Case of Retention Cyst from Liver; Review of Literature. J. F. X. Jones, Philadelphia.—p. 68.
*Colloid Carcinoma. D. Parham, Rochester, Minn.—p. 90.
Bone Tumors. Metastasis to Lungs from a Pure Myxoma. J. C. Bloodgood, Baltimore.—p. 106.

Precancerous Stage of Cancer of Larynx.—If it is admitted that certain curable laryngeal conditions are in some cases the sequential predecessors of incurable cancer, Jackson says, it is clearly the duty of the physician not only to eradicate those curable precancerous conditions, but to contribute to their early recognition by applying to them the term "precancerous," however faulty such a word may be from a purely scientific, histologic point of view. From a clinical point of view, continual laryngeal irritation from any cause in a person of cancerous age, may be regarded as clinically precancerous, in the sense that these conditions may be contributory factors in the etiology of cancer, and as such should be cured, surgically or otherwise.

Results of Arterial Decortication.—Ten arterial decortications were performed by Callander on six patients. For one of these patients three arteries were decorticated for disease of three extremities, while for another patient the operation was performed on two arteries for trouble in two extremities. In the spastic group of three cases no improvement can be recorded. In the three cases in which an obliterative arteritis seemed to play the predominant rôle, one definite cure is recorded. In one of these cases no improvement followed the operation, and the patient died later from an ascending gangrene of the extremity. In the third case, no improvement followed the operation, and the gangrene remained as before intervention. In a case of pain in the thumb, the pain disappeared following the operation, but for it there was substituted another pain in the flexor group of muscles. This pain later likewise disappeared, and there has been no recurrence of the symptoms.

Perivascular Sympathectomy.—Lehman concludes that the "perivascular sympathectomy" of Leriche in the dog does not result experimentally in the physiologic changes in the extremity which he described in clinical cases, and the vasodilation from proved total sympathectomy does not affect wound healing.

Colloid Carcinoma.—Two hundred and three cases of colloid carcinoma of the gastro-intestinal tract are analyzed by Parham. Colloid carcinomas occurred in the stomach (6.5 per cent.), cecum (22.2 per cent.), appendix (7.0 per cent.), transverse colon (7.3 per cent.), sigmoid (4.3 per cent.), rectum (5.5 per cent.), pancreas (two cases), gallbladder (8 per cent.), salivary glands (one case), bladder (2.5 per cent.), prostate (one case), kidney (one case), ovary (1.1 per cent.) and breast (1.12 per cent.). Peritoneal carcinomas occurred in 16 per cent. of all cases. Colloid carcinoma is usually slow of growth and late to metastasize to glands and other organs. It often grows by permeation and may cause extensive thickening of the wall of the affected organ. Local glands are often involved long before metastasis has reached distant glands. Though histologically less malignant on account of permeation of adjacent tissues, it is particularly difficult to eradicate. Death is often delayed, but the eventual mortality is greater than in other types of carcinoma. Recurrence is often entirely localized to the site of origin. Many patients with colloid carcinoma respond remarkably well to treatment by roentgen ray and radium.

Archives of Internal Medicine, Chicago

January, 1923, **31**, No. 1

*Carbon Dioxid and Oxygen Content of Stomach Gas in Normal Persons. A. D. Dunn and W. Thompson, Omaha.—p. 1.
*Chemotherapy of Bacterial Infections. II. Chemotherapy of Experimental Localized Bacterial Infections with Special Reference to Pleuritis. J. A. Kolmer, Philadelphia.—p. 9.
*Experimental and Clinical Study of Quinidin Sulphate: I. Experimental. H. M. Korns, Cleveland.—p. 15.
*Experimental and Clinical Study of Quinidin Sulphate: II. Clinical. H. M. Korns, Cleveland.—p. 36.
Technic of Determination of Velocity of Arterial Pulse Wave. C. Lundsgaard and O. Beyerholm, Copenhagen, Denmark.—p. 56.
*Relation Between Ingested Fat and Lipemia of Diabetes Mellitus. P. L. Marsh and H. G. Waller, Ann Arbor, Mich.—p. 63.
*Defects in Membranous Bones, Diabetes Insipidus, and Exophthalmus; Report of Case. L. C. Grosh and J. L. Stifel, Toledo, Ohio.—p. 76.
*Orthopnea. C. D. Christie and A. J. Beams, Cleveland.—p. 85.
*Effect of Olive Oil on Gastric Function as Measured by Fractional Analysis. B. C. Lockwood and H. G. Chamberlin, Detroit.—p. 96.
*Basal Metabolism in Dementia Præcox and Manic-Depressive Psychoses. C. E. Gibbs and D. Lemcke, New York.—p. 102.
*Hippuric Acid Synthesis as Test of Renal Function. S. Morgulis, G. P. Pratt and H. M. Jahr, Omaha.—p. 116.
*Edema Associated with Moderate Bicarbonate Administration During Convalescence from Pneumonia. C. A. L. Binger, A. B. Hastings and J. M. Neill, New York.—p. 145.

Carbon Dioxid and Oxygen Content of Normal Stomach Gas.—Evidence was obtained by Dunn and Thompson that atmospheric air introduced into the stomach tends to come into equilibrium with the blood gases within one hour in the case of carbon dioxid, and considerably later, if at all, in the case of oxygen. All the carbon dioxid found in the stomach gas of normal persons, whether fasting or after a full meal, can be accounted for by secretion or diffusion from the gastric mucosa. In the study of stomach gas occurring in pathologic

conditions, an upper normal limit of at least 9 per cent. carbon dioxid tension must be postulated.

Chemotherapy of Bacterial Infections.—Studies with ethylhydrocuprein hydrochlorid (optochin) in the treatment of experimental pneumococcus pleuritis and meningitis, Kolmer states, have indicated that in chemotherapeutic investigations in bacterial infections, localized infections of serous cavities offer a more favorable means for eliciting therapeutic effects of a medicament than do generalized infections and bacteremias. In localized infections of serous cavities it is possible to inject into the sacs sufficient amounts of medicament to render the contents bactericidal and curative. These amounts may be at least one half the maximum tolerated doses. In rapidly fatal generalized infections with bacteremias, however, the intravenous injection of one half the maximum tolerated dose may be without therapeutic effects. Localized bacterial infections of serous cavities would appear to be especially useful for chemotherapeutic studies with medicaments possessing high toxicity when the margin between dosis tolerata and dosis curativa is small. In the production of localized infections of such serous cavities as the subarachnoid space, pleural sacs and pericardium, test animals possessing some natural immunity to the test bacterium should be chosen, like the guinea-pig for pneumococcus pleuritis and pericarditis, the cat or dog for pneumococcus meningitis and the dog or rat for tuberculous pleuritis. The test micro-organism should be of moderate rather than extreme virulence, in order to reduce the invasiveness or aggressiveness of the bacteria for the blood and other organs.

Experimental Study of Quinidin Sulphate.—Korns reports in detail the results of experiments made for the purpose of studying some of the effects of quinidin on the normal dog and guinea-pig heart.

Clinical Study of Quinidin Sulphate.—Detailed reports are made by Korns of seven successful and six unsuccessful cases of auricular fibrillation treated with quinidin sulphate. The result attained by the use of quinidin in a case of ventricular paroxysmal tachycardia is also described. Clinical evidence is presented which lends support to the theory that the action of quinidin in abolishing circus movement is not conditioned by the type of cardiac lesion, degree of decompensation, duration of fibrillation, etc., but is essentially related to the pathologic physiology of the auricular muscle. The most important contribution of quinidin to clinical cardiology is that it provides a means by which the rôle of auricular fibrillation in myocardial failure may be quantitatively estimated. Quinidin is universally a heart muscle poison. In each patient an estimate of this effect must be weighed carefully against the expectation of benefit to be derived from restoration of normal sinus mechanism. Indications for the use of digitalis and quinidin are entirely separate and clearly defined. Electrocardiograms made before and after resumption of normal rhythm are analyzed.

Relation Between Ingested Fat and Lipemia of Diabetes Mellitus.—March and Waller noted the effect on the lipoidemia of diabetic patients of the high fat, low protein, low carbohydrate diets described by Newburgh and Marsh. The patients selected for this study represented a number of different types of diabetes mellitus, varying in age, severity of the disease, duration of diabetic symptoms, previous treatment, degree of acidosis. From an examination of the records of these patients it is apparent that there was no increase in the lipoid content of the blood during the periods of observation, and, of much greater significance, that in the patients in whom a hyperlipoidemia existed when they first came under observation, the total fat fell to approximately normal levels. It is regarded by Marsh and Waller as being very strong evidence that the prevalent assumption which postulates that diabetic hyperlipoidemia is dependent on the excessive ingestion of fat is unwarranted. The explanation of this phenomenon must be sought in some other unusual feature of the diabetic state.

Membranous Bone Defects, Diabetes Insipidus and Exophthalmos.—A case is reported by Grosh and Stifel exhibiting some degree of dwarfism, diabetes insipidus, defects in the membranous bones of the skull and pelvis, and exophthalmos. Pituitary extract, administered hypodermically, controlled the polyuria temporarily. After a time the effect of pituitary extract diminished. It had no effect on the bone defects.

Orthopnea.—Christie and Beams divide orthopnea into (1) orthopnea of necessity and (2) orthopnea of choice. Orthopnea cannot exist without reduction of the vital capacity. If the original loss from disease is great and the patient loses an addition amount on lying down, there will be "orthopnea of necessity." "Orthopnea of choice" is more common and exists when the original loss from disease is smaller or the percentile loss, as a result of posture, is not so great. Some patients with as great reduction in their vital capacity from disease as is seen in "orthopnea of necessity" do not become orthopneic.

Effect of Olive Oil on Gastric Function.—The experiments made by Lockwood and Chamberlin demonstrate that olive oil, given before meals, as is usually done clinically, reduces the average total acidity about 12 per cent., and lowers the high point of the curve about the same degree. It causes a marked delay of the test meal in the stomach and the oil is the last portion of the meal to be evacuated. When oil is given, regurgitation of bile is five times as frequent as without it.

Basal Metabolism in Psychoses.—Definitely abnormal basal rates were found by Gibbs and Lemcke in psychotic patients in the more acute phases of their psychosis. The variations from normal were greater in dementia praecox patients than in cases of manic-depressive insanity. The patients did not show sufficient evidence to explain satisfactorily the findings in terms of thyroid or pituitary disorder. Several of the dementia praecox patients did show some evidence of disturbed growth, including incomplete sex maturity. Thyroid by mouth raised the rate to normal in two cases of manic-depressive depression, but did not do so in a case with more marked constitutional psychopathic features. No immediate mental improvement followed thyroid in these three cases.

Hippuric Acid Synthesis as Test of Renal Function.—In normal persons benzoic acid, administered either as the acid or its salt is completely synthesized to hippuric acid and the kidney is stimulated to enhanced activity. In nephritic and cardiorenal patients the synthesis is never complete and the kidney is apparently fatigued by the excessive exertion. The benzoic acid passing in the urine is not all conjugated with glycocol to form hippuric acid. A variable portion appears as the uncombined acid or as its salts. The unconjugated part of the benzoic acid can be reduced to an entirely negligible amount on a diet of milk and toast. Following the ingestion of a large dose of benzoic acid or sodium benzoate the free benzoic acid in the urine invariably increases though to a very variable degree in different individuals. The increase is particularly great in patients with definite kidney affection. In all the patients whom Morgulis and his associates examined the amount of hippuric acid synthesized in twenty-four hours, following the ingestion of a standard dose of benzoic acid or sodium benzoate, ranged from 53 to 95 per cent., while from 59 to 100 per cent. of the benzoic acid administered could be recovered in the urine. In one group of patients, the recovery of benzoic acid has been almost the same as in normal subjects, but the hippuric acid synthesis was less than in the normal owing to the fact that a large amount of the benzoic acid was excreted in unconjugated form. In another group of patients both the elimination of total benzoic and of hippuric acid falls much below that in the normal subject. The free benzoic acid in the urine following a dose of the acid is apparently greater in the nephritic than in the cardiorenal cases. Clinically, the method will in all probability not find extensive application or favor because it involves much work, and in order to secure reliable results the patient's regimen must be supervised very closely.

Edema Associated with Bicarbonate Administration in Pneumonia.—The case studied by Binger and others was one of lobar pneumonia, in which an average of 5.7 gm. sodium bicarbonate had been given for a period of thirty-five days prior to admission to the hospital. The patient showed intense cyanosis with marked oxygen unsaturation of the arterial blood, rapid breathing, anasarca and hydrothorax,

and evidence of alkalosis (blood p_H 7.55). Oxygen therapy largely relieved cyanosis and dyspnea. Immediately thereafter the patient began to excrete retained bases and water. Diminution of edema was accompanied by gradually increasing lung volume and return to normal type of respiration. No definite impairment of kidney function could be established. At the time of discharge from the hospital, the patient's blood oxygen, carbon dioxid content, and p_H were normal, the urine p_H was normal, and the urine was free from albumin and casts. The case is reported to show that definite untoward results may follow the administration of sodium bicarbonate, and to point out the character of certain of these untoward results.

Boston Medical and Surgical Journal

Feb 1, 1923, **188**, No. 5

Basal Metabolism of Young Girls. F. G. Benedict, Boston.—p. 127.
Pasteur—Scientist, Believer, Democrat. C. W. Eliot.—p. 138.
Nicolaas Tulp and Rembrandt's Painting, "Anatomical Demonstration by Tulpius." C. G. Cumston, Geneva, Switzerland.—p. 143.

Bulletin Lying-In Hospital of City of New York

January, 1923, **12**, No. 3

*Fundamental Cause of Splanchnoptosis. Abdominal Incompetence: A Developmental Factor. II. Study of Certain Details of Prenatal Evolution of Abdomen: With Special Reference to Status at Term. A. C. Vietor, Boston.—p. 139.
*Treatment of Cardiac Failure During Pregnancy. H. E. B. Pardee, New York.—p. 207.
Analysis of Cases of Bacteriemia Occurring at Lying-In Hospital. M. Rosensohn, New York.—p. 214.

Cause of Splanchnoptosis.—Vietor endeavors to demonstrate anatomically and experimentally that the fundamental cause of visceral ptosis is abdominal incompetence and that this is a developmental factor; that, consequently, the retention of the viscera in their normal positions depends on the development of normal competence of the abdomen; and that failures in the normal development of this abdominal competence and visceral retention are correlated with the development of certain departures from the normal body form—the most constant of these departures being the retracted lower thorax.

Cardiac Failure During Pregnancy.—The important feature of heart disease during pregnancy, Pardee says, is the degree of cardiac failure. If this is slight the disease is of little importance. Even with a moderate degree of failure it will be possible for the child to be born if the mother is allowed to take a risk which is not so great as sometimes stated. The first attack of severe decompensation can usually be recovered from with proper treatment, unless the attack should occur during labor. With proper observation and prompt operation, severe decompensation should not occur during labor. Abdominal section is the operation of choice in the emergency, provided a low forceps delivery cannot be done. Ether anesthesia, started by chloroform, is a better anesthetic for these patients than gas oxygen. Oxygen inhalations from a mask are helpful to clear up persistent cyanosis. Without severe cardiac failure or after recovery from it, most patients can be carried through to term or to an induced labor during the eighth month. During labor, the attendant should watch for a pulse over 95 or respiration over 25 per minute, precordial discomfort, dyspnea, cough, and should not allow these small signs to become big before he puts an end to the labor. In treating lesser grades of failure during pregnancy, the patient must rest enough to spare the heart from overstrain, but this may not necessitate rest in bed for more than a short time. Digitalis should be given in doses sufficient to insure effect. With this treatment Pardee feels sure it will be possible to diminish the present mortality of about 25 per cent. for severe cases and 10 per cent. for all cases to a figure which is less disquieting.

Endocrinology, Los Angeles

November, 1922, **6**, No. 6

Invitations to Research in Endocrinology. W. B. Cannon, Boston.—p. 745.
Glandular Status of Brown Multilocular Adipose Tissue. A. T. Rasmussen, Minneapolis.—p. 760.
Present Position of Testicle Transplantation in Surgical Practice: Preliminary Report of New Method. M. Thorek, Chicago.—p. 771.
Steinach Operation: Report of Twenty-Two Cases with Endocrine Interpretation. H. Benjamin, New York.—p. 776.
*Analysis of One Thousand Testicular Substance Implantations. L. L. Stanley, San Quentin, Calif.—p. 787.
Pathogenesis of Thyrotoxicosis. Part 2. N. W. Janney, Los Angeles. p. 795.
*Positive Achievements of Endocrinology. A. S. Blumgarten, New York.—p. 811.

Results of Testicle Substance Implantation.—The results of 1,000 implantations of animal testicular substance in 656 human subjects, including seven females, are reported by Stanley. The greater number of subjects received only one injection, although some received as many as seven injections. Striking objective improvement was seen in numerous cases of general asthenia, acne vulgaris, asthma and senility. Subjective or objective improvement was seen in various cases of rheumatism, neurasthenia, poor vision and a few other conditions. The results, as a whole, are tabulated. In general, testicular substance seems often to have a beneficial effect in relieving pain of obscure origin and in the promotion of bodily well being. The operation is practically painless and harmless. The testicular substance was cut into strips with a knife or cork-borer, in sizes suitable for filling the pressure syringe. This instrument is similar to the one devised by Beck for paraffin injection. By means of a dental syringe with a No. 16 needle, 3½ inches long, the semisolid testicular substance was injected underneath the skin of the abdomen. There were comparatively few sloughs, and the patient was not subjected to a week's hospital inconvenience. The testicles of goats, rams, boars and deer have been used. So far as can be determined, there is very little difference in the effects produced by testicular material obained from the different animals.

Positive Achievements of Endocrinology.—The progress in endocrinology is divided into several categories by Blumgarten: (1) progress in the well established syndromes of the various ductless glands; (2) contributions of endocrinology toward various nonspecific branches of medicine; (3) contributions to therapy, and (4) contributions to public health. Each item is discussed. The progress made in the treatment of endocrinopathies and in organotherapy, in general, is reviewed from the standpoint of what has been established, in other words, the actual accomplishments. Of the pharmaceutic products obtained from the ductless glands only specific substances are mentioned. Speaking of pluriglandular therapy, Blumgarten says: "It seems to me highly unscientific to prepare shotgun combinations of gland substances in the hope that the body will extract from these combinations those that it needs. The only way progress will ever be made in rational organotherapy is to be able to recognize specific deficiencies and to supply effective substances for these deficiencies. If more than one deficiency is present they should be individually recognized and two or more corresponding substances given."

Georgia Medical Association Journal, Atlanta

January, 1923, **12**, No. 1

Overmedication in Infants and Children. B. Bashinski, Macon.—p. 1.
Complemental Breast Feeding. L. Gerdine, Athens.—p. 4.
Antitoxin and Intubation in Diphtheria. W. N. Adkins, Atlanta.—p. 8.
Control of Common Contagious Diseases. J. A. Wood, Atlanta.—p. 12.
Importance of State Pediatric Society as Component Part of State Medical Association. W. A. Mulherin, Augusta.—p. 19.
Treatment of Congenital Syphilis in Children. J. Yampolsky, Atlanta.—p. 23.
Complete versus Subtotal Hysterectomy. G. W. Quillian, Atlanta.—p. 26.
Asthma. A. H. Bunce, Atlanta.—p. 29.
Report of 1,000 Obstetric Cases in Private Practice. J. T. Benson, Atlanta.—p. 31.

Iowa State Medical Society Journal, Des Moines

January, 1923, **13**, No. 1

Control of Circulation. G. Kessel, Cresco.—p. 1.
Tumors of Breast. W. Jepson, Sioux City.—p. 5.
Surgery of Thyroid. P. A. White, Davenport.—p. 11.
Obstetric Problems Involved in Stillbirths and Deaths of New-Born Infants. C. S. Bacon, Chicago.—p. 15.
Recent Progress in Treatment of Chronic Empyema. C. A. Hedblom, Rochester, Minn.—p. 21.
Newer Aspects of Urinary Surgery. D. N. Eisendrath, Chicago.—p. 25.

Journal of Cancer Research, Baltimore

April, 1922, **7**, No. 2

*Biologic Evidence for Inheritability of Cancer in Man. XVIII. M. Slye, Chicago.—p. 107.
Acidosis, Alkalosis and Tumor Growth. William H. Woglom, New York.—p. 149.
Fibrosarcoma of Skin in a Gold Fish (Carassus Auratus). J. F. Schamberg and B. Lucke, Philadelphia.—p. 151.
Action of Buried Tubes of Radium Emanation on Neoplasias in Plants. I. Levin and M. Levine, New York.—p. 163.
Rôle of Neoplasia in Parasitic Diseases of Plants. I. Levin and M. Levine, New York.—p. 171.

Inheritability of Cancer in Man.—Cancer and noncancer tendencies segregate out and are transmitted as such, therefore, Slye maintains, they are unit characters. A specificity of tissue type in specific organs from ancestor to offspring segregates out and is transmitted as such. It is, therefore, a unit character. Since these things are unit characters, it is possible to manipulate them by selective breeding and thereby to implant them indelibly in any species, or to eliminate them permanently and completely from any species. Cancer and noncancer behave like the absence and presence, respectively, of a mechanism fitted to control proliferation and differentiation in regenerative processes, and an animal either has this mechanism or lacks it, no matter to what species he may belong. There is, therefore, a ready and certain genetic method of escape from cancer for the individual and for the race. The demonstration of the inheritability of cancer and noncancer tendencies in mice, Slye believes, is a demonstration of the inheritability of these tendencies in man and in all other species which show cancer, if the theory of evolution is to be maintained and the existence of a biologic law is admitted. From the procedure of analyzing stock into its unit characters in order to manipulate the cancer tendency, there has emerged the fundamental law of heredity—"What goes into the germ plasm must come out in the offspring."

Journal of Pharmacology and Experimental Therapeutics, Baltimore

January, 1923, **20**, No. 6

Importance of Suprarenal Glands in Action of Pilocarpin, Physostigmin and Strychnin. C. W. Edmunds, Ann Arbor, Mich.—p. 405.
*Investigation into Chemotherapy of Acridine Dyes in Experimental Tuberculosis. M. I. Smith, Washington, D. C.—p. 419.
Toxicity and Actions of Normal Butylamins. P. J. Hanzlik, San Francisco.—p. 435.
Pharmacologic Properties of Some Iso-Urea Derivatives. S. Basterfield, Saskatchewan, Canada.—p. 451.
Comparative Stimulant Efficiency of Some Local and Systemic Agents on Normal and Depressed Respiration and Irritant Efficiency of Some Agents. P. J. Hanzlik, San Francisco.—p. 463.
*Studies on Pharmacology of Sodium Citrate. I. Influence of Sodium Citrate on Respiration and Circulation. W. Salant and N. Kleitman, Augusta, Ga.—p. 481.

Chemotherapy of Acridin Dyes in Experimental Tuberculosis.—The acridin derivatives, acriflavine, proflavine, and their silver compounds, acridinium yellow, and acridin orange, Smith finds, possess a high degree of inhibition on the growth of the tubercle bacillus in vitro. These substances do not alter the pathogenicity of the tubercle bacillus when exposed to their action at 38 C. for forty-eight hours. Experiments made to determine whether the serum of animals treated with proflavine would show inhibiting or bactericidal properties for the tubercle bacillus yielded negative results. Proflavine, acriflavine and the silver compound of the latter were applied in the treatment of experimental tuberculosis in the guinea-pig and in the rabbit. No effect on the tuberculous process was noted.

Influence of Sodium Citrate on Respiration and Circulation.—The results presented by Salant and Kleitman show that sodium citrate may be both a stimulant and a depressant. Small and medium doses of sodium citrate stimulated respiration in dogs, cats and rabbits under urethane anesthesia. Such doses may cause stimulation or depression of respiration in dogs anesthetized with chloretone. Small and medium doses given to dogs, when morphin-ether narcosis was employed, were without any effect on respiration in some experiments, while in others the action was the same as under chloretone anesthesia. Respiration was depressed or paralyzed by large doses of citrate even when injected slowly into the circulation, and by medium doses when repeated at short intervals. Transitory acceleration of respiration occurred when large doses of citrate were injected intramuscularly in unanesthetized animals; also when injected subcutaneously into decerebrated and into unanesthetized animals. Respiration was only slightly accelerated or was slowed by citrate given after double vagotomy. Small and medium doses of citrate were without effect or produced only a slight fall of blood pressure in dogs under chloretone or urethane anesthesia. A fall or a rise of blood pressure may occur when citrate is given to dogs under morphin-ether narcosis. Small and medium doses of citrate given intravenously to cats under urethane anesthesia produced a fall of blood pressure of from 30 to 60 per cent.

Journal of Radiology, Omaha

January, 1923, **4**, No. 1

Bone Cysts (Ostitis Fibrosa): Variety—Polycystic Ostitis Fibrosa. J. C. Bloodgood, Baltimore.—p. 1.
Principles of Stereovision. J. B. Wantz, Chicago.—p. 9.
Weight Development in White Rats as Influenced by Roentgen-Ray Exposure. S. E. Sanderson, Detroit.—p. 13.
Problem of High Potential Measurement as Associated with Deep Therapy at High Voltages. F. Rieber, San Francisco.—p. 15.

Kansas Medical Society Journal, Topeka

January, 1923, **23**, No. 1

Organic vs. Functional Disease. G. E. Paine, Hutchinson.—p. 1.
Visual Field in Functional Nerve Diseases. H. L. Scales, Hutchinson.—p. 2.
Kahn Precipitation Test for Syphilis. W. Levin.—p. 4.
Heredity. T. A. Stevens, Cancy.—p. 6.
Focal Infections. B. P. Smith, Neodesha.—p. 9.

Maine Medical Association Journal, Portland

January, 1923, **13**, No. 6

Treatment of Essential Hypertension. M. C. Webber, Portland.—p. 147.
Surgical Strategy as an Adjunct to Local Anesthesia in Abdominal Surgery. R. E. Farr, Minneapolis.—p. 156.

Military Surgeon, Washington, D. C.

January, 1923, **52**, No. 1

Safety in Aviation. W. H. Wilmer.—p. 1.
Progress in Aviation Medicine During 1921. L. H. Bauer.—p. 9.
Further Observations on Cardiovascular Physical Fitness Test. E. C. Schneider.—p. 18.
Oxygen Exhaustion of Blood as Factor in Flight Limitations. C. W. Greene and C. H. Greene.—p. 28.
Experimental Analysis of Cause of Occasional Fainting and Collapse in Official Air Service Test. C. W. Greene and N. C. Gilbert.—p. 31.
Eye in Aviation—Some Experience in Work of Department of Ophthalmology, Medical Research Laboratory, Third Aviation Instruction Center, A. E. F., France. C. Berens, Jr.—p. 35.
Aviation Problems in Navy. V. S. Armstrong.—p. 49.
Selection of Aviation Personnel. P. O. Northington.—p. 53.
Medical Aspects of Naval Gas Warfare. G. H. Mankin.—p. 60.
Medicine in Revolt of Sixteenth Century—Historical Sketch. H. M. Brown.—p. 65.
I. Determination of Specific Preventive Immune Bodies Produced in Blood as Result of Preventive Typhoid and Paratyphoid B Inoculations. II. Notes on Relation Between Preventive Inoculations and Status Lymphaticus. B. Tanabe.—p. 83.
Reminiscence of Battle of Borodino. W. W. Keen.—p. 97.
Fleet Surgeon—Some Thoughts on His Official Relationship and Opportunities for Useful Service. W. H. Bell.—p. 98.

New Jersey Medical Society Journal, Orange

January, 1923, **20**, No. 1

Present Status of Diabetic Treatment. F. M. Allen, Morristown.—p 1.
Foreign Bodies in Air and Food Passages. H. B. Orton, Newark.—p. 15.
Reasons for New Higher Voltage Shorter Wave Length Roentgenotherapy. J. T. Stevens, Montclair.—p. 19.
Subacute Bacterial Endocarditis in a Boy Fifteen Years Old. F. C. Johnson, New Brunswick.—p. 23.

Oklahoma State Medical Association Journal, Muskogee

January, 1923, **16**, No. 1

Appendicitis and Appendiceal Colic. R. D. Long, Oklahoma City.—p. 1.
Acute Appendicitis. A. S. Risser, Blackwell, Okla.—p. 5.
Acute Appendicitis in Children. M. E. Stout, Oklahoma City.—p. 11.
Cardiospasm. J. C. Braswell, Tulsa.—p. 15.
Bone Manifestations in Early Syphilis. C. B. Taylor, Oklahoma City.—p. 17.
Case of Foreign Body (Chewing Gum) in Bladder—Removed by Lithotrite. J. C. Mraz, Oklahoma City.—p. 23.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

Jan. 20, 1923, **1**, No. 3238

Practical Difficulties in Obstetrics and Gynecology. C. Berkeley.—p. 89.
Diagnosis of Indefinite Masses in Breast. D. C. L. Fitzwilliams.—p. 94.
Minor Traumatic Disabilities of Upper Limb. P. J. Verrall.—p. 97.
Dosage of Radium. D. Turner.—p. 100.
*Function of Suprarenal Glands and Relation to Concentration of Hydrogen-Ions. R. McCarrison.—p. 101.
*Embolism of Right Brachial Artery as Complication of Lobar Pneumonia. A. H. D. Smith.—p. 103.
*Blood as Guide to Early Diagnosis in Lead Poisoning. R. Craik.—p. 103.

State of Suprarenal Glands in Inanition.—The observations recorded by McCarrison are said to provide evidence that: (*a*) the enlargement—with increased epinephrin content—of the suprarenal glands in inanition and in avitaminosis may be correlated with the acidosis which is associated with these states. Its occurrence during the terminal phases of avitaminosis, its association with marked respiratory disturbances, with falling body temperature, and with interference with oxygenation, and its rapid disappearance on the provision of the missing vitamins, suggest that it is an emergency effort on the part of the suprarenal glands. (*b*) The attempted exercises of emergency function by the suprarenal glands may be expected to occur in all conditions of alkalosis or of acidosis.

Embolism of Right Brachial Artery as Complication of Lobar Pneumonia.—The crisis in Smith's case came on the ninth day. Convalescence was uneventful until the fourth day, when symptoms of acute tuberculous infection of the right lung were manifested. About ten days later, during the night, the patient was seized with very acute pain in the right arm. Examination of that arm showed no apparent difference from the other. There was, however, severe pain with paresis of the muscles. The hyperesthesia extended from the wrist to the shoulder. There was almost complete anesthesia in the tips of the thumb and fingers. The right radial pulse was absent both to the finger and to the stethoscope. Following the course of the radial upward no pulsation could be felt in the antecubital fossa. At the level of the posterior wall of the axilla, in the line of the vessel, a very tender lump about the size of a small hazelnut could be felt. Above this level the vessel could be felt pulsating strongly. The radial pulse in the left side was present and bounding in type. The appearance of the arm did not change. The patient was profoundly intoxicated, delirium became marked, and night sweats became very heavy. The cough was lessened, but the physical signs in the lung were still those of acute phthisis. In a few days definite signs of endocarditis were present. The diagnosis was septic endocarditis following lobar pneumonia, with embolism of the brachial artery as a complication.

Blood as Guide to Early Diagnosis in Lead Poisoning.—In the absence of serious anemia, Craik says that punctate basophilia is more likely to be caused by lead than by anything else. Basophilia is pathologic, and demands investigation. So long as it is present something is acting injuriously on the marrow; if this is lead, the urine will contain a trace of the metal even in the absence of other symptoms. Craik suggests that a diagnosis of lead poisoning should depend, not on gross signs but on appreciation of suspicious symptoms and on an investigation of the blood and urine.

Jan. 27, 1923, **1**, No. 3239

Some Problems of Prostatectomy. J. T. Walker.—p. 133.
Surgical Treatment in Cases of Pulmonary Tuberculosis. H. M. Davies.—p. 138.
Damaged Lungs and Bronchiectasis. C. Riviere.—p. 141.
*Unusual Case of Typhoid Spine with Symptoms of Spinal Cord Affection. H. Turner.—p. 142.
Treatment by Diathermy. W. J. Turrell.—p. 143.
The Posthippocratic Schools of Medicine. R. O. Moon.—p. 145.

Unusual Case of Typhoid Spine with Symptoms of Spinal Cord Affection.—In November, 1919, Turner's patient developed typhoid. In February, 1920, he began to suffer from pains in the back. In December, 1920, he went through an attack of recurrent fever. He began to lose power in his legs in March, 1921. Standing or walking were impossible. There were distinct signs of partial spinal cord compression in the form of ankle and patella clonus; Babinski signs; rigidity of muscles and weakness of the lower limbs; loss of sense of position in the toes; hyperalgesia at the level of the seventh to eighth dorsal segments, and hyperesthesia of all kinds below; ataxic paresis of the lower limbs; no disturbance of the bladder or rectum. Examination of the spine showed an ill defined swelling between the shoulder blades between the fifth and seventh dorsal spinous processes. The integument in the same region was edematous and reddened. Fluctuation was distinct. Palpation of the spine inflicted great pain, especially in the lateral parts of the vertebrae. On opening the abscess, slightly odorous grey-green pus was found, from which a pure culture of typhoid bacillus was obtained. The cavity of the abscess was located to the right of the spinous processes, and led deeply toward the corresponding laminae. The subsequent course of the case was favorable, although the spinal cord symptoms subsided very slowly. Turner asserts that this is the only positive case of typhoid spondylitis complicated by suppuration.

Journal of Tropical Medicine and Hygiene, London

Jan. 1, 1923, **26**, No. 1

Castellani's Bronchomoniliasis; Report of Case with Pneumonic Onset and Peculiar Clinical Course. N. Farah.—p. 1.
Preliminary Training for Colonial Medical Services. E. P. Minett.—p. 5.
Case of Combined Pellagra and Beriberi. R. W. Mendelson.—p. 6.
*Treatment of Leprosy by Intravenous Injection of Chaulmoogra Oil. P. Harper.—p. 7.

Jan. 15, 1923, **26**, No. 2

Tonsillomycoses. A. Castellani, M. Douglas and T. Thomson.—p. 19.
Researches on Rickettsias and Etiology of Typhus Fever. J. De Sousa and A. Guimaraes.—p. 24.
Dengue vs. Malaria. R. E. Ingrim-Johnson.—p. 27.

Treatment of Leprosy by Injection of Chaulmoogra Oil.—Altogether 265 cases of leprosy at Makogai (Fiji) are, or have been, under treatment by the intravenous injection of chaulmoogra oil for periods of from a few weeks to two years. Forty thousand intravenous injections of the oil have been given without any serious mishap. The results reported by Harper are: dead, 11 patients, of whom 5 were very aged; improved, 28, including 15 discharged from the asylum; unchanged, 195; worse, 31. Of other attempts at specific treatment, Harper says: Intravenous injection of tartar emetic is useless for leprosy. Of four cases treated by sodium hydnocarpate, two have become worse and two have remained unchanged. Of eight cases treated by sodium morrhuate, none showed any improvement and one became worse. Moogrol was used intravenously and intramuscularly on ten patients, of whom four became worse and six remained unchanged. Harper is now trying tuberculin. So far he believes it to be useless, as no patient has yet shown signs of improvement. Harper's conclusion is that treatment by intravenous injection of chaulmoogra oil is of value in early cases, and is preferable to treatment by sodium gynocardate, sodium hydnocarpate, or sodium morrhuate. The moogrol brand of ethyl esters of chaulmoogra oil is too painful for intramuscular use, but is much more easily borne intravenously (in doses of 10 minims daily) than the crude oil. Whether the esters are as potent for good as the crude oil is not yet certain. He gives from 5 to 10 minims of the crude chaulmoogra oil, sterilized by heat, without the addition of any other drugs, daily, except Sunday, for three weeks at a time; this is followed by a rest for two weeks. Iritis, laryngitis and acute tuberculosis are indications for caution.

Lancet, London

Jan. 20, 1923, **1**, No. 5186

*Achlorhydria: Its Relation to Pernicious Anemia and Other Diseases. A. F. Hurst.—p. 111.
Deep Roentgen-Ray Therapy. W. Pilger.—p. 115.
Results of Deep Roentgen-Ray Therapy. R. Morton and H. B. Lee.—p. 117.
*Atavistic Degenerative Diathesis of Tuberculosis. W. C. Rivers.—p. 120.
*Wassermann and Flocculation Tests Compared. A. L. Urquhart.—p. 125.

*Syphilis Transmitted to Third Generation. C. F. T. East.—p. 128.
Technic of Spinal Analgesia for Laparotomy. S. A. Lane.—p. 129.

Relation of Achlorhydria to Pernicious Anemia.—From observations of cases, Hurst says, it is obvious, that anemia does not cause achlorhydria. The achlorhydria is present when the anemia is not. The achlorhydria is not of specific type, but, whatever its origin, it predisposes to the development of pernicious anemia. The history in most cases points to the achlorhydria being of primary or constitutional form. This is undoubtedly the inherited factor in the cases of familial pernicious anemia which have been recorded with increasing frequency in the last few years. In one of Hurst's cases the achlorhydria was due to alcoholic gastritis, in another it resulted from gastro-enterostomy for ulcer, and—conclusive proof that the achlorhydria is primary and not secondary—in at least five cases, pernicious anemia followed artificial achylia produced by total gastrectomy for cancer.

Atavistic Degenerative Diathesis of Tuberculosis.—Rivers believes that the so-called stigmata of tuberculous predisposition are nothing but signs of an already present infection. In Rivers' opinion, atavistic reversion to a primitive susceptibility to tuberculosis (seen in uncivilized races) needs mention, while race mixture can hardly be held universally responsible for tuberculous predisposition. Of 175 juvenile consumptives, twenty-two showed either squint, ichthyosis, red hair or persistent lanugo. In these twenty-two there was one miscegenate (mixed race) to every seven; but in the remainder only one miscegenate to every seventeen.

Wassermann and Flocculation Tests Compared.—Urquhart contends that the flocculation test gives as reliable results as the Wassermann reaction; and that the flocculation test is preferable on account of its greater simplicity.

Transmission of Syphilis to Third Generation.—The case described by East is said strongly to support evidence that congenital syphilis can be transmitted to the second generation. A young woman, aged 23, had syphilitic iritis. The Wassermann reaction in her blood was strongly positive. The father showed no trace of syphilitic lesion; nor was there anything in his history to suggest that he had ever had syphilis. His Wassermann reaction was negative. The patient's mother said that she had never had a miscarriage. The cornea of her left eye had unmistakable scars of an old interstitial keratitis. She had an external strabismus in this eye. In other respects her eyes were normal. Her teeth were typically hutchinsonian. The arch of the palate was high. The Wassermann reaction was strongly positive. She was an only child; her father had been a soldier on foreign service, who died of "senile decay" at the age of 71. East says that one may suspect that the soldier grandfather, who had seen much foreign service, originally introduced the syphilis into the family.

Jan. 27, 1923, **1**, No. 5187

Need for Research in Framing Tuberculosis Schemes. S. L. Cummins.—p. 165.
Relationship of Medicine and Toxicology. W. Willcox.—p. 167.
*Diastase in Blood and Urine as Measure of Renal Efficiency. G. A. Harrison and R. D. Lawrence.—p. 169.
*Glucose Tolerance in Chronic Arthritis and Allied Conditions. G. L. K. Pringle and S. Miller.—p. 171.
Asthma in Childhood. A. D. Fordyce.—p. 175.
Indications and Results of Myomectomy for Uterine Fibroids. A. E. Giles.—p. 178.
*Survival of a Premature Infant Under Artificial Feeding. P. T. O'Farrell.—p. 181.
Postoperative Mania. W. J. Tyson.—p. 182.
Unusual Case of Drug Susceptibility. H. H. Mills.—p. 182.

Results of Blood Diastase Tests.—The blood diastase of twenty-four healthy active persons was investigated by Harrison and Lawrence. It varied between 3 and 7 units, with a mean of 4.4. The index of twenty-three convalescent hospital patients, confined to bed for the greater part of the day (excluding diabetics and cases recovering from diseases of the pancreas, liver, or kidney), varied between 3 and 10 units, with a mean of 6.5. A blood diastase above 10 or below 3 may, therefore, be regarded as abnormal. The results of tests in forty-three cases of kidney disease showed, in comparison with the urea and other tests of renal efficiency, that diastase retention only occurs when at least three quarters of the total kidney substance has been thrown out of action. In one case the diastase tests failed to reveal very extensive renal damage. The patient died from uremia twenty-four hours after prostatectomy. His diastase in both blood and urine was normal, but the urea concentration test gave 1.55 per cent. While estimations of diastase in both blood and urine are of value in confirmation of other renal efficiency tests, the authors would not rely on an estimation confined to the urine.

Glucose Tolerance in Arthritis.—In general, the findings of Pemberton have been corroborated by Pringle and Miller. A lowered glucose tolerance was found in a large proportion of cases of arthritis and muscular fibrositis. This lowered tolerance was specially marked in the great majority of the severe infective cases as well as in the cases of periarticular and muscular fibrositis. The degree of intolerance was roughly proportional to the activity of the arthritic process. The glucose toleration reaction tended to return to normal with convalescence and recovery. The return to normal, was usually most rapid when the infective foci were removed. The estimation of glucose tolerance, in conjunction with the other clinical signs and symptoms, was found to be of assistance in the classification as well as in the prognosis of cases of arthritis. It is stated that in cases with markedly low glucose tolerance, and in which the focus of infection cannot be found nor removed, the prognosis is bad.

Survival of a Premature Infant Under Artificial Feeding.—The case reported by O'Farrell is of interest because the infant weighed 35½ ounces at birth, and was born during a malarial paroxysm, and also because she progressed under artificial feeding.

South African Medical Record, Capetown

Dec. 23, 1922, **20**, No. 24

Incidence of Undulant Fever in South Africa. Is It a Menace to Urban Communities? A. Gow.—p. 475.
Pneumoperitoneum. C. F. Beyers.—p. 479.
*How to Apply Medicines to Skin. C. Pijper.—p. 483.
Case of Chronic Stenosis of Common Bile Duct Treated by Opotherapy. C. Lundie.—p. 487.

Nongreasy Base for Ointments.—The preparation used by Pijper as a basis for ointments is the "bassorin" or "cremor exsiccans" of the English Pharmaceutical Codex, the "linimentum exsiccans" of some continental codexes, which is prepared from tragacanth, 4 parts; glycerin, 2 parts, and water, 94 parts. It is never used pure, and only as a basis, for the incorporation of medicaments: zinc (up to 10 per cent.); phenol (up to 1 per cent.); salicylic acid (up to 5 per cent.); chrysarobin (up to 5 per cent.), and tar (up to 5 per cent.).

Archives Internationales de Laryngologie, Paris

November, 1922, N. S., **1**, No. 1

*Maxillary Sinusitis in the New-Born. F. J. Collet.—p. 1041.
Roentgen Study of Ear Development in the Fetus. Ferreri.—p. 1051.

Maxillary Sinusitis in the New-Born.—Collet reports a case of maxillary sinusitis in a month old baby. He was able to find only six similar cases in the literature in infants ranging in age from 3 days to 5 weeks. The prognosis is grave. Suppuration may last several months, notwithstanding repeated intervention and prolonged nasal wash. In two cases, at least, death occurred with abscess of the lung, or, as in one of his own cases, with abscess of the brain. The pathogenesis of this maxillary sinusitis is different from that of the adult. In the fetus the sinus is connected with the nasal fossa by a large orifice and its cavity is small. These make it improbable that it is due to an infection of nasal origin. Osteitis of the superior maxilla is the dominant factor. Collet considers it a general infection localized in the maxilla and consecutively in the sinus.

Archives Médicales Belges, Liége

October, 1922, **75**, No. 10

Foreign Bodies in the Digestive Tract. E. Henrard.—p. 977.
*Immediate Repair of Perineum Torn in Delivery. F. Leynen.—p. 983.
Sanitary Conditions in Eastern Europe. L. van Boeckel.—p. 987.

Immediate Repair of Perineum Torn During Delivery.—The levator ani muscles support the intrapelvic organs and protect the perineum. Leynen states that in rupture of the

perineum the levator ani muscles must be brought together and the whole muscular floor must be strengthened by methodical movements which he calls "perineal gymnastics." To bring the levator ani together, a strong catgut thread is passed around the two segments and tied. The suture of the other perineal tissues is of secondary importance. The "perineal gymnastics" consist of contraction of the sphincter of the anus. On account of the connection between this muscle and the internal segment of the levator ani, the sphincter contracts at the same time as the levator. This is easily confirmed by palpation through the vagina. This exercise is practiced after every delivery especially when the perineum is soft but not torn. The movements are made daily about twenty times during the first fifteen days. This strengthens the muscular floor of the perineum and pelvis.

Bulletin Médical, Paris

Dec. 23, 1922, **36**, No. 52

*Morbid Syndrome Due to Nervous Shock Before Sleep. A. Hanns.—p. 1051.
Nephritis Due to Bismuth. C. Simon.—p. 1052.

Nervous Spasms on Retiring.—The man of 36 suffered from spasmodic attacks of nervous jerking as soon as he lay down to sleep. Hanns studied the case for six months, but was unable to explain the spasms until a second similar case in a somewhat older man allowed him to conclude that the syndrome was due to slight disturbance in the spinal cord or brain, from fatigue, general debility or slight uremic intoxication. Under sedatives, rest and strict hygiene, the spasms disappeared completely. The reclining position seemed to be an essential factor in these *secousses nerveuses présomniques*, as he calls them.

Néoplasmes, Paris

November-December, 1922, **1**, No. 6

*Refractometric Tests with Cancer. A. Knipfer.—p. 177.
Experimental Epithelial Tumors in Mice. U. Parodi.—p. 188.

Refractometric Tests of Serum of Patients with Cancer.—Knipfer made parallel tests with Freund-Kaminer's and Abderhalden's methods. Deep treatment with roentgen rays increased the cytolytic power of cancer serum, while healthy serum sometimes lost this power. Abderhalden ferments also increased after this treatment in cancer, while they were never present in health. He hopes that this reaction to roentgen rays will improve the serologic diagnosis of cancer.

Presse Médicale, Paris

Dec. 20, 1922, **30**, No. 101

*Meningitis with Lymphocytosis. E. Apert and R. Broca.—p. 1093.
*Sulphur in External Dermatotherapy. R. Sabouraud.—p. 1094.
*Action of Chlorids on Gastric Secretion. A. Frouin.—p. 1096.

Curable Meningitis with Lymphocytosis.—Apert and Broca publish two cases of meningitis with marked lymphocytosis in the cerebrospinal fluid, and no polymorphonuclears. One case was due to *Spirochaeta icterohemorrhagiae*, the other gave negative reactions. Both children recovered completely. They point out that the lymphocytosis was too absolute for tuberculosis.

Sulphur in External Dermatotherapy.—Sabouraud reviews the uses of preparations of sulphur and concludes that they are excellent in all affections of the follicles or localized around the hair follicles.

Action of Chlorids on Gastric Secretion.—Frouin found in experiments on dogs that a salt-free diet inhibits within a short time (about eight days) completely the gastric secretion. Ingestion of salt increases the secretion, as also salt given intravenously. Yet the direct application of salt to the mucosa of the stomach gives better results. Chlorids of calcium and magnesium have the same action as sodium chlorid on the stomach secretion.

Dec. 23, 1922, **30**, No. 102

*Periarterial Sympathectomy. R. Leriche.—p. 1105.
Topography of Nerves of the Brachial Plexus. E. Olivier.—p. 1108.
*External Secretion of Pancreas in Asystolia. Garofeano.—p. 1109.
Elimination of Albumin in Chronic Nephritis. A. Hanns.—p. 1110.
*Epileptic Attacks Due to Cerebral Inhibitions. P. Hartenberg.—p. 1111.
Drugs Antagonistic to Quinidin. L. Cheinisse.—p. 1113.

Periarterial Sympathectomy.—Leriche gives the bibliography and technic of his operation. Experiments on animals cannot refute his findings since it seems that the typical changes (contraction of the artery by irritation and a subsequent vasodilation) occur only in man. The periarterial (or arterial) sympathectomy is different from Jaboulay's denudation of arteries with tearing of the nerves. Jaboulay would certainly have noticed the contraction of the artery during the operation if it had occurred with his method, as it does with Leriche's. He publishes a case of severe arteriosclerosis in which the carotid tore during the operation. Caution is therefore necessary in senile gangrene, and injections of alcohol into the arterial sheath might sometimes be preferable to block the nerve fibers. The operation causes a better peripheral circulation with elevation of arterial pressure and local temperature. It is indicated with impaired peripheral nutrition not of central nervous, vascular or blood origin. The beginning stages of chronic arthritis of peripheral joints might be improved by it, and, indirectly, the functioning of the endocrine glands might be favorably influenced. [A recent article on Leriche's periarterial sympathectomy was published in THE JOURNAL, page 173.]

Functional Value of External Secretion of Pancreas in Asystolia.—Garofeano studied the pancreatic secretion of trypsin and amylase in cases of decompensated heart. Both ferments were present in larger amounts than normal, especially when the gastric secretion was impaired.

Epileptic Attacks Due to Cerebral Inhibition.—Hartenberg attributes severe epileptic attacks to an inhibition of cortical centers, and not to excitation. He considers minor attacks and epileptic equivalents from the same point of view.

Schweizerische medizinische Wochenschrift, Basel

Dec. 21, 1922, **52**, No. 48

*Exfoliative Dermatitis. E. Wieland.—p. 1165.
Benign Albuminuria in Children. P. Lauener.—p. 1170.
Volume of Blood in Pregnant Women. E. Gueissaz and F. Wanner.—p. 1173. Cont'd.
*Injury of the Retina by the Sun. J. Strebel.—p. 1177.
Therapeutic Increase of the Blood Coagulability. P. F. Nigst.—p. 1178. Cont'n.
Folklore on Erysipelas. A. Martin.—p. 1183.

Exfoliative Dermatitis.—Wieland observed an epidemic of twelve cases of pemphigus neonatorum at the same time as twenty-one cases of pemphigus in the maternity hospital. The cases in the adults were light and the epidemic stopped after sterilization of the clothes. The infants presented all forms from an abortive pemphigus to the most severe and fatal type. In seven infants *Staphylococcus aureus* was cultivated from the blisters and from the blood in two cases.

Injury of the Retina by the Sun in Spite of Protective Glasses.—Strebel's patient observed the eclipse of the sun through deep blue glasses, and did not recover from the injury to the macula lutea. Blue glasses do not protect and should not be used.

Policlinico, Rome

Dec. 18, 1922, **29**, No. 51

*Substances with Incomplete Vitamin Action. M. Pantaleoni.—p. 1653.
Painful Cavernoma in the Lumbar Muscles. L. Cevario.—p. 1654.
*Activation of Malaria Parasites. I. di Pace.—p. 1658.
*Breeding of Oysters and Hygiene. M. Gioseffi.—p. 1660.

Substances with Incomplete Vitamin Action.—Pantaleoni investigated the action of different substances in polyneuritic pigeons and animals. He confirmed the partially curative action of ammonia, but not of its salts.

Activation of Malaria Parasites by Different Methods.—Di Pace compared the effects of different substances on the activation of latent malaria. Injections of strychnin nitrate were best. Epinephrin, pituitary extract, milk, and cold baths were a little less effective.

Hygiene in the Breeding of Oysters.—Gioseffi discusses the difficulties of hygienic supervision of oyster breeding. Local interests interfere with the requirements. He quotes an example in which the sanitary authorities had to admit for sale oysters from a port which served as a cesspool for 30,000 inhabitants. He recommends special laws.

Riforma Medica, Naples

Dec. 18, 1922, **38**, No. 51

*Intravenously Injected Gases in Peritoneal Cavity. L. Torraca.—p. 1205.
*Breathing Gymnastics in Treatment of Adenoids. P. Brisotto.—p. 1206.
Origin of Peritoneal Pseudomyxoma. S. G. Giardina.—p. 1209.
Pathogenesis of Herpes Zoster. M. G. Marinesco.—p. 1211.
Recent Literature on Thymus Hyperplasia. L. Torraca.—p. 1214.

Accumulation of Intravenously Injected Gases in the Peritoneal Cavity.—Torraca found that not only oxygen, but nitrogen and carbon dioxid injected intravenously accumulate in the peritoneal cavity. He assumes a retrograde transport of the gases through the vena cava.

Pulmonary Ventilation and Breathing Gymnastics in Adenoids.—Brisotto points to the harmful effects of the shallow mouth breathing of children suffering from adenoids. Breathing gymnastics increased the capacity of respiration very markedly, even before the adenoids were removed. It should be used in all cases of operation, because the patients need the education, which contributes much to the general welfare of the patient and to the normal development of the thorax.

Revista de Medicina y Cirugía, Havana

Dec. 25, 1922, **27**, No. 24

*Epidemic Poliomyelitis. G. Aróstegui.—p. 814.
*Eradication of Yellow Fever, Plague and Malaria. M. G. Lebredo.—p. 821.
*Synthesis of Gastric and Duodenal Ulcers. Luis Agote.—p. 836.
Abortive Treatment of Syphilis. D. Speroni.—p. 851.

Arrest of Epidemic of Acute Anterior Poliomyelitis.—Aróstegui describes a small epidemic of rudimentary or abortive cases of poliomyelitis in August at a Havana institution with 200 child inmates. Seven of the children presented symptoms in a mild form, and contacts developed headache, tremor, and a febrile meningeal reaction. In all, the symptoms spontaneously subsided when the children and their attendants were isolated. The upper air passages were systematically disinfected and the children were given sun baths two or three times a day. The prompt recognition and isolation of the early cases evidently aborted the epidemic disease.

Eradication of Yellow Fever, Plague and Malaria in Latin America.—Lebredo is chief of the public health service in Cuba. He pleads for concerted and vigorous action by the Latin American nations to stamp out malaria. Plague and yellow fever are already under control. When local conditions do not allow mosquito extermination, reliance must be placed on quinin sterilization of the human hosts.

The Stomach-Gallbladder-Duodenum Syndrome.—Agote declares that the traditional separation of the medical from the surgical department conflicts with modern science. Concerted supervision by the internist and the surgeon has revealed previously unsuspected interlocking functions of the gallbladder, stomach and duodenum. He calls attention in particular to the acid-sensory syndrome with gastric ulcer. The gastric juice may not be excessively acid, but the tissues are extra sensitive; gases distend the walls, and adhesions are stretched. Vomiting relieves by evacuating the overacid or the distending contents. This clinical picture may be maintained by adhesions dragging on these viscera. The only difference is that the disturbances are less acute but more constant, with occasional sharp exacerbations and with less connection with meals. The symptoms from adhesions may include cardiospasm and other reflex actions. The roentgen-ray findings and tests of the chemistry of the stomach are of little use, but pneumoperitoneum shows up the adhesions. Whatever treatment is instituted, the adhesions must be broken up. Surgical treatment of an ulcer, regardless of its site and duration, is advocated. In laparotomies, every effort should be made to avoid unnecessary manipulation of peritoneum and viscera.

Semana Médica, Buenos Aires

Nov. 30, 1922, **2**, No. 48

*Celiac and Hypogastric Neuroses. J. Arce and C. A. Castaño.—p. 1105.
Prenatal Care. Mamerto Acuña.—p. 1111.
Visceral Cirrhosis with Hydatid Cysts. R. G. Cabred.—p. 1114.
Welfare Work for Child of School Age. J. P. Garrahan.—p. 1119.
Three Years Operative Experience with Hydatid Cysts. O. Ivanissevich.—p. 1123.
Physical Training. E. Romero Brest.—p. 1128.
Workmen's Compensation. G. Bosch Arana.—p. 1132.
Infection of Milk in Tuberculous Cows. E. Fynn.—p. 1135.
Cow's Milk for Infants under Six Months. E. Foster.—p. 1137.
Enlarged Glands in Neck in Examining Recruits. J. A. López.—p. 1140.
Vomiting as a Symptom. A. Vitón.—p. 1142.
Sacralization of Lumbar Vertebra. F. Z. Guerrini.—p. 1145.

Celiac and Hypogastric Neuroses.—Arce and Castaño assert that pathology of the sympathetic system is being recognized in many conditions hitherto ascribed to gallstones, ulcers, etc. Sympathetic tonus is determined by the balance of the endocrine organs. Hence organotherapy is indicated in the celiac and hypogastric neuroses. The complete picture of these two types of abdominal neurosis is described, with the treatment that has been found effective.

Siglo Médico, Madrid

Nov. 25, 1922, **70**, No. 3598

Radioactivity of Manzanares Waters. J. Muñoz del Castillo.—p. 509.
*Treatment of Diabetes. C. von Noorden.—p. 510.
Traumatic Gangrene: Two Cases. Carrasco.—p. 512. Conc'n.
Medical Service in Morocco Campaign. E. Slocker.—p. 515. Conc'n.

Treatment of Diabetes.—Von Noorden protests against fasting for more than forty or sixty hours at most. During the fast he keeps the patient in bed, allowing only weak tea and brandy in water, and gives a sedative. This brief period of fasting is a good preliminary to any course of treatment. In grave cases it should be repeated in two weeks at latest. A day of green vegetables is useful before the "oatmeal cure," and this should be followed by the day of fasting. Sixty hours of fasting is the most effectual means to ward off impending coma. The Allen method, he says, is unnecessarily cruel. Equally good results can be obtained with his milder regimen, without danger of debilitating the patient. The main thing is to test the tolerance in the individual cases.

Jan. 6, 1923, **71**, No. 3604

*Complement Fixation Under Vaccine Therapy. J. Codina Castellví.—p. 1. Conc'n.
Mucous Cyst in Conjunctiva. C. Jimenez Lopez et al.—p. 6.
Etiology of Gastro-Intestinal Disease of Infants. F. García Martínez.—p. 10.

Complement Fixation Under Vaccine Therapy.—Codina Castellví's tests were made on tuberculous patients under treatment with Ferran's antialpha vaccine.

Archiv für Gynäkologie, Berlin

Dec. 30, 1922, **117**.

*Transactions of German Gynecologic Congress.—pp. 1-436.

German Gynecologic Congress.—The seventeenth biennial meeting of the German Gesellschaft für Gynäkologie was held at Innsbruck, in June, 1922. The 111 communications, with discussions, are published in full. No special topics had been appointed for discussion, but radiotherapy of cancer, the Kielland forceps, Traube's color photography, and the gas interchanges in eclampsia seemed to attract most attention. The discussion of childbirth under hypnosis was particularly lively, some denouncing while others lauded it. Mansfeld reported complete amnesia in 90 per cent. of thirty cases and absolute analgesia in 50 per cent. He protests against the term "hypnosis," saying that the procedure should be called "twilight sleep by suggestion." Hallauer reported application of a very little chloroform supplemented by hypnosis or suggestion—*narko-hypnose*—in 3,000 gynecologic and obstetric cases.

Archiv für klinische Chirurgie, Berlin

Dec. 14, 1922, **121**

*Transactions of Surgical Congress.—pp. 3-311.
*Surgical General Infection. E. Lexer.—p. 315.
Experimental Bases for Disinfection of Wounds. Neufeld.—p. 326.
To Insure Antisepsis in the Depths. R. Klapp.—p. 343.
To Insure Asepsis. W. Noetzel.—p. 349.
*Examination of Blood in Surgical Affections. O. Stahl.—p. 358.
Autolysis and Regeneration of Tissues. von Gaza.—p. 378.
*Influence of Operations on Organism. W. Löhr.—p. 390.
*Technic for Thyroidectomy. E. Streissler.—p. 409.
*Valvular Control of Respiration. W. Pfanner.—p. 421.
*Operative Treatment of Pulmonary Tuberculosis. A. Brunner.—p. 482.

Trephining the Sella Turcica. F. Oehlecker.—p. 490.
*Puncture of Corpus Callosum. H. Kästner.—p. 512.
*Localized Fibrous Osteitis. G. E. Konjetzny.—p. 567.
*Technic for Suture of Bone. M. Kirschner.—p. 635.
Surgery of Carotid Gland. H. Klose.—p. 689.
Radium Treatment of Cancer of Esophagus. Kurtzahn.—p. 725.
Anatomy of Membranous Pericolitis. E. Seifert.—p. 754.
*Absorbable Tampons. H. Kümmell.—p. 764.
Pain in the Viscera. G. v. Bergmann.—p. 774.
Resolvent for Scar Structures. E. Payr.—p. 780.

Transactions of Surgical Congress.—This bulky volume of 830 pages contains the proceedings of the forty-sixth annual meeting of the Deutsche Gesellschaft für Chirurgie. It also contains twenty articles which are elaborations of short communications presented at the congress.

Surgical General Infection.—Lexer rejects the term sepsis, and insists on the necessity for discriminating between bacterial general infection and toxic general infection, and between the pyogenic, putrid and specific forms of bacterial general infection. Toxic general infection is of animal, bacterial, or tissue toxin origin. Various questions are suggested by this classification of surgical general infection: Do the toxic tissue elements act alone or with bacterial toxins to influence the course of the disturbances? Do the tissue toxins act by promoting the virulence of the bacteria, or by reducing the defensive forces? To what extent do they influence immunity reactions? He cites data already available which throw a little light on these questions. The main thing now is to separate the tissue toxins from the products of bacteria. This may reveal new bases for therapeutics.

The Differential Blood Count in Surgical Affections.—Stahl emphasizes that it is not the presence of pus that modifies the cell content of the blood, but the consequences of the presence of pus. He insists on the necessity for serial blood counts. The general trend is more instructive than single findings. Change in the blood count precedes the clinical aggravation or improvement, as he shows by nine typical cases.

Influence of Surgical Affections on the Blood.—Löhr presents evidence which confirms the profound changes in the blood serum under the influence of operations, fractures and infectious diseases. The destruction of tissue induces changes of a chemicophysical nature although the albumin content may not be modified. The speed of sedimentation of the red corpuscles is a sensitive and reliable index of them. The extent of the modification of the sedimentation indicates the extent of tissue destruction. With this extraordinarily simple and easy test we can distinguish between inflammatory and noninflammatory bone lesions, etc. The changes it reveals occur earlier and last longer than changes in the differential leukocyte count. The sedimentation test is most instructive when it is negative.

Technic for Thyroidectomy.—Streissler slits the isthmus of the thyroid on the median line and removes the necessary portions of the thyroid without molesting the capsule. By this means there is no danger of removing the parathyroid bodies, while the nourishment is insured of the portions of the thyroid that remain.

Valve Breathing.—Pfanner states that the results of experimental research, clinical experience and necropsy findings show the identity of the process in all conditions in which some valvelike mechanical obstacle impedes respiration. He analyzes the various clinical pictures involved, from goiter and foreign bodies to asthma.

Operative Treatment of Pulmonary Tuberculosis.—Brunner remarks that surgical treatment of pulmonary tuberculosis is gaining ground. In 381 cases of thoracoplasty, 35 per cent. were apparently cured by the operation. In 116 recent cases at Munich, 66 per cent. were apparently cured. The mortality was 27 per cent. in the nineteen cases in which the operation was completed at a single sitting. It was only 4 per cent. in the forty-seven with more than one sitting. In Sauerbruch's service, thoracoplasty operations in fifteen years total 500.

Puncture of the Corpus Callosum.—Kästner relates that Payr has applied this measure in twenty-four cases of congenital and seven cases of acquired hydrocephalus. Persistent improvement followed in the majority. It was applied in cases of brain tumor, epilepsy, trauma of the head, etc., to a total of 102 cases. He extols the method as a routine practice for hydrocephalus, and also for decompression in brain tumors when the tumor cannot be localized. It is absolutely contraindicated with cerebellar tumors, and with tumors near the third or fourth ventricles and aqueduct of Sylvius. With epilepsy, tentative puncture of the corpus callosum is justified after failure of other measures.

Localized Fibrous Osteitis.—Konjetzny discusses the origin and nature of solitary cysts in bones and myelogenous giant-cell sarcoma.

Suture of Bones.—Kirschner gives an illustrated description of various devices for suturing bone stumps together and reconstructing the shaft. Twenty-two cases are summarized.

Absorbable Tampons.—Kümmell's absorbable tampons have been described in these columns. He states that they are proving very useful. In his twenty cases, the catgut pad healed in place without reaction on the part of the tissues.

Deutsche medizinische Wochenschrift, Berlin

Dec. 15, 1922, **48**, No. 50

*Changes of Reactivity During Treatment. H. Königer.—p. 1669.
*Sensitiveness of Skin to Poisons. K. Zieler and H. J. Markert.—p. 1672.
*Pathogenesis of Fever. R. Greving.—p. 1673.
Heart Insufficiency and Digitalis. R. Ehrmann and L. Dinkin.—p. 1675.
Action of Cinchophen. E. Starkenstein.—p. 1677.
Blood Sugar Determination. R. Offenbacher.—p. 1677.
Typhus Fever. D. D. Pletnew.—p. 1678.
Acetic Ether in Pediculosis. Bieber.—p. 1678.
Bacterioscopic Diagnosis of Rectal Gonorrhea. A. Calmann.—p. 1678.
Ring Forceps. Pfleiderer.—p. 1678.
Modification of the Record Syringe. H. Feriz.—p. 1679.
Abnormal Labor Pains. M. Henkel.—p. 1679.
Foreign Bodies in Nose. Finder.—p. 1681.
Committee Report on Reform in Medical Examinations. J. Schwalbe.—p. 1684. Cont'd.
Beginnings of Bacteriologic Researches. C. Flügge.—p. 1685.

Changes of Reactivity During Treatment.—Königer found that the reactivity of a patient changes after antipyretics, narcotics, mechanotherapy, hydrotherapy and parenteral injections of specific and nonspecific proteins, in a regular way: After a short lowering of resistance comes a stage of increased resistance, which may last for one or two days. This phenomenon has nothing to do with specific immunity, since it occurs also in healthy subjects and vanishes comparatively soon. It is possible by keeping up in this way the nonspecific resistance to overcome the specific allergy of the patient. The action of antipyretics is not merely symptomatic; it leads indirectly to a specific immunity because of the short periods of lowered resistance when the infection flares up. He attributes such an action also to quinin in malaria, mercury in syphilis, and salicylic acid in rheumatism. Parenteral injections of proteins are superfluous since the same action may be obtained with milder means, especially with physical treatment. The most important point is in the necessary intervals, and the optimal duration of these intervals depends on the individual changes in the reactivity, the *reizbarkeitsänderung*, of the subject. Very small doses of iodin (1 mg.), are sufficient in goiters if the intervals are not less than from three to eight days.

Sensitiveness of Skin to Poisons in Tuberculosis.—Zieler and Markert found that persons without tuberculosis react to intracutaneous injections of the diphtheria and dysentery toxins and of peptone in the same way as tuberculous patients. Such reactions never flare up in these patients after a subcutaneous injection of tuberculin.

Pathogenesis of Fever.—Greving reviews the modern investigations on the subject, especially those dealing with the relation of the central nervous system to the regulation of temperature. The production of heat is localized chiefly in the abdominal organs, and not in the muscles.

Medizinische Klinik, Berlin

Dec. 10, 1922, **18**, No. 50

*Psychic Infantilism. F. Jamin.—p. 1575.
*Treatment of Permanently High Blood Pressure. Grober.—p. 1576.
*Typhus Fever. M. H. Kuczynski.—p. 1579.
*Determination of Borders of Lung and Exudates by Inspection. E. Weisz.—p. 1582.

*Anaphylaxis and Heart Failure in Diphtheria. G. Scholz.—p. 1585.
Intravenous Use of Digitalis. S. Hirsch and M. Kaiser.—p. 1586.
Operative Treatment of Abortion. Liepmann.—p. 1586. Id. Pentz.—p. 1587.
Roentgen-Ray Diagnosis of Duodenal Ulcers. G. Herrnheiser.—p. 1587.
Intravenous Injection of Concentrated Arsphenamin. J. R. Thim.—p. 1589. Conc'n No. 51, p. 1623.
Dermatomycoses. F. Pinkus.—p. 1593.
Traumatic Deformities. S. Peltesohn.—p. 1594.

Psychic Infantilism.—Jamin emphasizes the importance of exogenous factors (nutrition, infectious diseases) in the prepubertal period, as causes of inhibition of psychic evolution. The treatment is expectant; and a cautious but methodical training in adaptation to social requirements is better than rest cures.

Treatment of Permanent Hypertension by Physical Means.—Grober begins with regulation of diet. For psychologic reasons it is better to prohibit coffee and nicotin entirely. High altitudes have a beneficial effect, as well as the subtropic and tropic climate. Mild hydrotherapy is good, especially shower baths at from 30 to 32 C. on chest and back (not on the head). The use of carbon dioxid baths is still doubtful; oxygen baths may increase the pressure in neuropaths. Careful mechanotherapy and breathing gymnastics are beneficial. Periodical venesections are sometimes necessary. Some cases react very well, at least temporarily, to irradiation with blue or ultraviolet rays. General diathermy seems to give more permanent results.

Typhus Fever.—Kuczynski reports continued cultivations of a virus from guinea-pigs infected with typhus fever. He claims that this virus is identical with *Rickettsia prowazeki* and belongs to the proteus group. The Weil-Felix bacillus, *Proteus X*, is not the cause of typhus fever, but is very near this virus. Immunologic experiments performed by him and Eichholz on animals gave very good results, both prophylactic (vaccines) and therapeutic (serum).

Determination of Borders of Lung and Exudates by Inspection.—Weisz describes two interesting methods for determination of the lung area. The first consists in observation of a slight bulging of the intercostal spaces at the beginning of phonation. The patient repeats (with pauses between) the German word "kitt." Bulging is also distinct over an exudate (except in an open pneumothorax), and thus reveals the upper border of the liver in such cases. The second phenomenon was described by him twenty years ago. It consists in the formation of little pits, *grübchen*, during a quick and not too deep inspiration. The beginner should examine only narrow strips of the intercostal spaces (1 to 4 cm.), covering the rest with the hands. He explains the mechanical principles involved.

Anaphylaxis and Heart Failure in Diphtheria.—Scholz's patient, aged 31, who had been injected eight and a half years previously with diphtheria antitoxin, was treated for diphtheria with an intramuscular injection of 3,000 units of serum. Twelve days later urticaria set in, and three hours later complete collapse. No heart sounds were present. Camphorated ether revived the patient. Three hours later a new attack of urticaria was followed by weak pulse and disturbances of the sensorium. Inhalation of ether restored the patient again. Several similar attacks were stopped by inhalations of ether, and the patient finally recovered. Scholz points out the resemblance of this anaphylactic condition to the sudden death in diphtheria, and recommends the use of ether.

Zeitschrift für urologische Chirurgie, Berlin

Nov. 4, 1922, **11**, No. 3-4

*Reflex Anuria. K. Neuwirt.—p. 75.
*Urogenital Disease and Tonsillectomy. R. Picker.—p. 86.
*Hydronephrosis. P. Blatt.—p. 93.
*Nature of Hypertrophy of the Prostate. J. v. Borza.—p. 109.
*Tuberculosis of Genital Organs. R. Bachrach.—p. 114.
Hydronephrosis from Phimosis. L. Raphaelson.—p. 122.
"Vascular Complications with Hypernephroma." W. Israel.—p. 131. Reply. E. Rehn.—p. 136.

Treatment of Reflex Anuria.—Neuwirt says that the kidneys are more richly provided with nerves than almost any other organ. The splanchnics are the vasomotor nerves of the kidneys; blocking the splanchnic nerve not only arrests kidney colic but also checks reflex inhibitions. It thus puts an end to reflex anuria and oliguria. Blocking the splanchnic nerve by Kappis' technic has the same effect as severing the nerve in animals. Neuwirt applied the Kappis method in a case of recurring kidney colic and reflex oliguria, probably induced by calculi, in a man aged 54. The results sustained his theoretical assumption, the colic subsided and the urine output increased to an average of 1,800 c.c. He blocked the splanchnic nerve on both sides in this case; possibly one side alone would have sufficed.

Cure of Staphylococcus Infection of Urinary Apparatus.—In the case described, the man, aged 30, had staphylococci regularly in the urine. They were evidently eliminated through the parenchyma of both kidneys. Local treatment had been applied thirty-eight times to the kidneys without avail. Picker then removed both tonsils, and in two days the urine was clear and sterile.

Hydronephrosis.—Blatt states that hematuria was the only clinical symptom in one of the twenty cases he has been studying. Anomalies in development were evident in the majority of the cases. His experience warns that cystic dilatation of the lower end of the ureter should be promptly corrected or otherwise hydronephrosis may follow. It was intermittent in one of his three cases in this group. A connection with affections of the female genital organs was frequently manifest. With dysmenorrhea, the possibility of hydronephrosis should always be considered. The latter has sometimes been mistaken for appendicitis, gallbladder disease, and even gastric ulcer.

Nature of Hypertrophy of the Prostate.—Borza concludes from his research that so-called hypertrophy of the prostate is not hypertrophy but a tumor, an adenoma of the accessory periurethral glands.

Tuberculosis of Genital Organs.—Bachrach analyzes 70 cases of tuberculous epididymitis in which the epididymis was removed since 1902. In 20 per cent. the kidney was also tuberculous. Reexamination of 25 more than three years later showed 15 apparently cured. Two patients have died of old age without return of the tuberculosis. One man died from tuberculous peritonitis after nine years of good health, subsequent to unilateral castration and nephrectomy. Two others died from generalized tuberculosis twelve and eighteen months later. Of the 70 patients, 36 were between 20 and 40 and 15 between 50 and 60 when the genital disease developed. There was a history of gonorrhea in 16. Voelcker's technic has made removal of the seminal vesicles practicable, and this has materially improved the prognosis with genital tuberculosis. In conclusion, Bachrach reports the case of a man of 35 who had had a series of operations on the genital organs for tuberculosis. The symptoms indicating endocrine insufficiency subsided after a testicle graft and removal of the left seminal vesicle.

Zentralblatt für Chirurgie, Leipzig

Dec. 23, 1922, **49**, No. 51

*Spastic Ileus and Lumbar Anesthesia. A. Mayer.—p. 1882.
*Early Detection of Cancer Recurrence. F. Franke.—p. 1885.
Diagnosis of Loss of Femoral Nerve Function. Schmidt.—p. 1886.
Operation for Fistula of Gallbladder. A. Hildebrandt.—p. 1887.
Mixed Tumor of Parotid Gland, with Bone Metastasis. M. Budde.—p. 1888.
*Deutschländer's Tumors of the Metatarsus. H. Blencke.—p. 1889.
Comment on "Prostatectomia Mediana." G. Neugebauer.—p. 1892.
Modification of Deschamps' Needle for Ligation of Blood Vessels. L. v. Czirer.—p. 1894.
Operative Method for Perforated Gastroduodenal Ulcer. H. Zoepffel.—p. 1895.

Spastic Ileus Subsides Under Intraspinal Anesthesia.—Mayer points out what seems to him a close connection between spastic ileus and lumbar anesthesia. In two cases, several days after a gynecologic laparotomy, ileus-like symptoms appeared suddenly, with meteorism, vomiting and painful stiffening of the intestines. Various means to restore intestinal function proved unavailing. Mayer decided to reopen the abdomen under renewed lumbar anesthesia. Immediately after the intraspinal injection of the procain-epinephrin mixture, the patient passed flatus and a copious stool. The operation was not performed, and the patient promptly recovered

without further complications. He is convinced that intestinal spasm was present and, furthermore, that it was dispelled by the lumbar anesthesia. Whether the anesthesia dispelled the intestinal spasm directly, or merely stimulated peristalsis, did not appear clearly. Mayer emphasizes that this treatment would of course be valueless in ileus of mechanical origin—it might even be dangerous.

Method of Recognizing Beginnings of Cancer Recurrence.—Franke recommends his method for the early recognition of beginnings of cancer recurrence in the region of a tumor operated on. It consists in rubbing the finger several times in succession across the suspected region, but not pressing so hard as to cause pain. Though previously neither the eye nor the palpating finger has discovered anything abnormal, this will often reveal small nodules in the skin. They appear as small whitish, papular elevations which turn red spontaneously or as the skin is stroked; sometimes they are of a deeper red, resembling urticarial spots. The redness continues for from five to ten minutes—sometimes even longer. Franke thinks this phenomenon is due to the fact that the cancer cells secrete a poison that has an irritating effect on the surrounding tissues—especially the blood vessels and the nerves. This irritation may be of the same nature as that noted at the border of a cancer and the healthy tissue, which manifests itself in the form of inflammatory changes in the connective tissue. Franke recommends that patients who have been operated on for cancer be requested to present themselves at definite short intervals, in order that they may be examined for this irritation phenomenon.

Metatarsophalangeal Arthritis Deformans.—Blencke reports some cases of an inflammatory process in the metatarsophalangeal joints, especially of the great toe, which he has observed recently in about twenty young girls. The inflammation was associated with deforming changes in the bone. He ascribes the condition to the wearing of low shoes with high heels. The almost perpendicular slope of the metatarsal bones resulting from high heels throws an abnormal weight on the heads of the metatarsal bones and on the first phalanx of the great toe, as he illustrates by a roentgenogram of a foot in a high-heeled shoe. Arthritis deformans of the first phalanx of the great toe may be due to such overweighting. A second roentgenogram illustrates one of the typical cases of deformative inflammation in a girl, aged 18. He discusses in connection with it Deutschländer's tumors of the metatarsus.

Casopsis Lekaruv Ceskych, Prague

Dec. 16, 1922, **61**, No. 50

Treatment of Parkinsonian Syndromes with Large Doses of Sodium Cacodylate. K. Henner.—p. 1196. Cont'n.
Treatment of Abortion. E. Haim and M. Zahradnik.—p. 1200.
Psammoma of the Spinal Dura Mater. Niederle.—p. 1203.

Acta Medica Scandinavica, Stockholm

Nov. 29, 1922, **57**, No. 2-3

*Chlorin in Blood and Tissues. P. Iversen and H. Hansborg.—p. 95.
Cancer in Ulcer and Ulcerated Cancer Simulating Round Ulcer. E. Dahl-Iversen.—p. 134.
*Red Corpuscles and Their Variations. E. J. Rud.—p. 142. Conc'n No. 4.
*Slight Glycosurias. J. E. Holst.—p. 188.
*Polycythemia Rubra. H. Curschmann.—p. 228.
*Undernutrition and Endocrine Disturbances. H. Curschmann.—p. 240.
Syringomyelia Simulating a Spinal Tumor. T. Stenholm.—p. 247.
*Seasonal Variation of Weight of the Tuberculous. Strandgaard.—p. 275.

Distribution of Chlorin in Blood and Tissues After Injection of Sodium Chlorid.—Iversen and Hansborg studied in rabbits the distribution of intravenous infusions of 10 per cent. salt solution. They found that the sodium chlorid is deposited in the tissues so rapidly that one circulation may be sufficient to reestablish the equilibrium of chlorin between the blood and tissues. About 8 per cent. of the injected amount remains in the blood, even after seventy minutes. In thyroidectomized animals, more salt is retained in the tissues after the infusion. In normal animals more salt is found in the blood after the injection than would correspond to its water content. In thyroidectomized animals the opposite is true. There were indications that the kidneys influence salt retention in the tissues. Ligature of one or both kidneys after the injection is followed by increased flow from the tissues into the blood just as after injections of epinephrin or pituitary extract.

Red Corpuscles and Their Variations.—Rud surveys the literature and gives his findings in 69 adults and 49 children. Average errors were about 2 per cent. He found in male adults an average of 5,330,000 erythrocytes (maximum 5,900,000, minimum 4,370,000). In adult women the average was 4,830,000 (maximum 5,390,000; minimum 4,300,000). Old persons have slightly lower figures than the young. The newborn averaged 5,680,000 (maximum 6,590,000 and minimum 4,470,000); nurslings 5,110,000; children between 1 and 14 years, 4,360,000, without influence by sex.

Slight Glycosuria.—Holst describes seventeen cases of moderate glycosuria. Some are of the diabetic, some of the renal type, and seven cases are considered as being on the border line between them. The two latter groups are benign.

Polycythemia Rubra.—Curschmann describes two cases of a familial polycythemia rubra. The spleen was distinctly enlarged in the first case. The cases began in early childhood, and remained almost stationary. While pointing to an unquestionable constitutional factor, he does not admit the assumption of endocrine disturbances in the pathogenesis of the disease.

Undernutrition and Endocrine Disturbances.—Curschmann admits thyroid changes in edema from undernutrition, but emphasizes also the differences (especially in the concentration of serum) from hypothyroidism. Undernutrition seems to cause increased gastric hyperacidity in people who are inclined to it, while it may cause achylia in others. Diabetes as well as exophthalmic goiter occurred less frequently during the war. Therapeutic possibilities of undernutrition in exophthalmic goiter are discussed, although not yet recommended.

Seasonal Variation in Weight of Tuberculous Patients.—Strandgaard studied the variations in the average weekly gain of patients in five Danish sanatoriums. He found a remarkable coincidence of these changes in different sanatoriums, distinct when weeks were compared, and striking in the comparison of months. Atmospheric influences seem to be the cause. The maximum gain was in September. This was followed by a rapid decline in October and November.

Hospitalstidende, Copenhagen

Jan. 3, 1923, **66**, No. 1

*Antethoracal Esophagoplasty. Thorkild Rovsing.—p. 1.

Antethoracal Esophagus.—Rovsing has decided that there is no necessity for making the new esophagus from a segment of bowel or the stomach. These unnecessarily complicate the procedure, as a new esophagus answering every purpose can be made out of two long skin flaps turned back over a long large drainage tube. The flaps are sutured together with catgut on the median line, from neck to stomach. The skin beyond is loosened and drawn up to suture together over the whole. In the woman illustrated, Rovsing waited six weeks for the parts to heal before he united the upper stump of the esophagus to the new skin tube. Five different operations between Feb. 17 and Aug. 6, 1921, were required; then the patient was discharged in excellent condition. She eats with good appetite, has gained 26 pounds, and can be considered completely cured. Rovsing has applied the first two or three steps of the procedure in two other cases still under treatment. He severs the esophagus and brings the peripheral stump out through a minute incision beyond the sternocleidomastoid muscle. This does away with the pocket above the atresia in which food and secretions stagnate. Rovsing regards this as an essential improvement over other methods, all of which bury this stump.

Hygiea, Stockholm

Dec. 31, 1922, **84**, No. 24

*Obsessions and Their Treatment. P. Bjerre.—p. 1009.

Obsessions and Their Treatment.—Bjerre describes typical instances of inhibiting or impelling complexes, and discusses treatment. He says that psychanalysis in these cases has to be conducted, like a mathematical problem, until the correct equation is found.